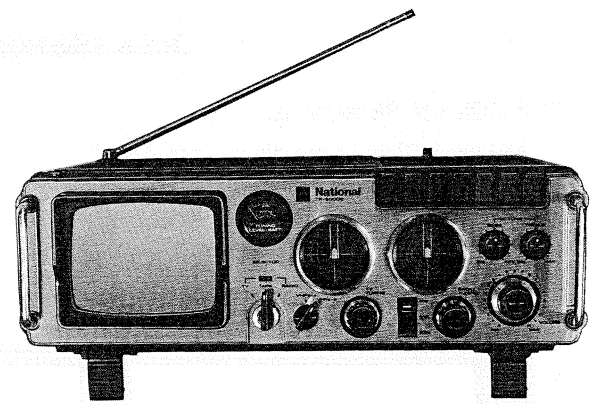
Service Manual

Black and White Television with Radio Cassette

TR-5000E

Chassis Model No. T509-E
Chassis Family No. T509

Main Manual



Specifications

Television

Power Source:	AC: 110, 120, 220, 240V 50/60Hz
Power Consumption:	AC: 18W, DC:8W
Antenna Impedance:	VHF Monopole antenna, VHF External antenna 300Ω , Balanced Type.
Receiving Channels:	2-12 (VHF)
Intermediate Frequency:	Video: 38.9MHz Sound: 33.4MHz
Integrated Circuits:	2
Semiconductor: (With Radio and Cassette Recorder)	37 Transistors 37 Diodes 1 Thermistor 1 H. V. Rectifier
Nominal Anode Voltage:	7.6KV (Zero Beam Current)
Picture Tube:	140BEB4 5" 55° Deflection
Speaker:	10cm Round. Impedance 8Ω
Automatic Circuits:	Keyed Automatic Gain Control Saw Tooth Automatic Frequency Control, Automatic Voltage Regulator
Dimensions:	Height: 16.3cm Width: 44.5cm Depth: 33.6cm
Weight:	NET 7Kg

Radio Cassette

Motor:	Mechanical governot motor
Frequency Response:	80Hz – 15KHz
Recording System:	AC bias
Operation:	Push button one-touch operation with Auto-Stop and mechanical pause
Tape Speed:	4.8cm/s. (1-7/8 ips.)
Program Time:	1 hour with C-60 cassette tape
East Forward and Rewind Time:	Approx. 120 seconds with C-60 cassette tape
Track System:	2-track monaural recording and playback
Input:	MIC: sensitivity 0.32mV/applicable microphone impedance 200-600Ω Aux. sensitivity 100mV/150KΩ
Output:	EXT SP: 8Ω REMOTE: for start ans stop
Radio Frequency Range:	MW; 525 – 1605KHz SW1; 2.3 – 7MHz SW2; 7 – 22MHz
Sound Output:	2W Max.

National

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

CODE NO. TED7803-248M

CAUTION

The high voltage supply at the picture tube anode will given an unpleasant shock, but does not supply enough current to give a fatal burn or shock. However, secondary human reaction to otherwise harmless shocks have been known to cause injury. Always discharge the picture tube anode to the receiver chassis before handling the tube.
Certain portions of the high voltage generating circuit are dangerous and extreme caution should be observed. The picture tube is highly evacuated and, if broken, glass fragments will be violently expelled.
WHEN HANDLING THE PICTURE TUBE, ALWAYS WEAR GOGGLES AND PROTECTIVE CLOTHING'

DISASSEMBLY INSTRUCTIONS

TOP COVER REMOVAL

1. Remove H. HOLD knob and V. HOLD knob. (Pull)
2. Remove 7 screws Ⓐ shown in Figure 1.
3. Pull the top cover upward to remove.

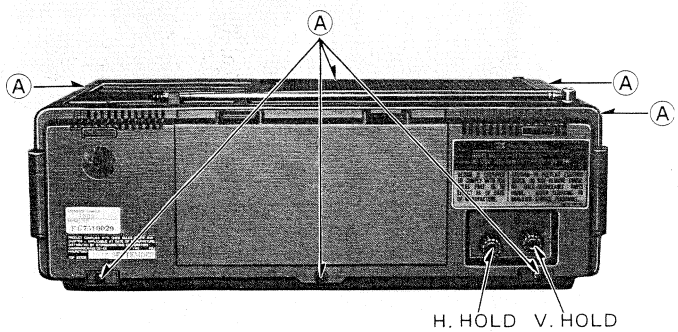


Figure 1

RADIO BLOCK REMOVAL

1. Remove front knobs and remove 4 screws Ⓔ shown in Figure 3. And pull the radio block towards you.

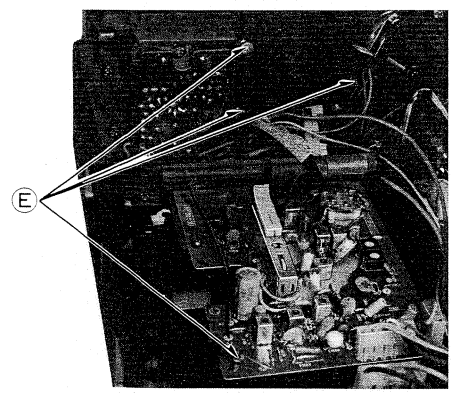


Figure 3

TAPE MECHANISM REMOVAL

1. Remove screws Ⓑ and Ⓒ.
2. Remove 6 screws Ⓓ shown in Figure 2.
3. Pull the mechanism towards you.

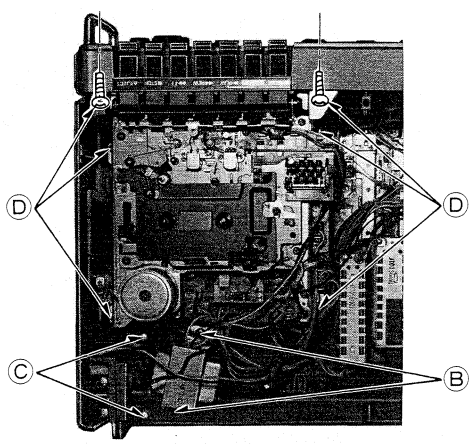


Figure 2

MAIN PRINT REMOVAL

1. Reomve front knobs, (pull) and remove 2 screws Ⓕ shown in Figure 4. And pull the main block towards you.

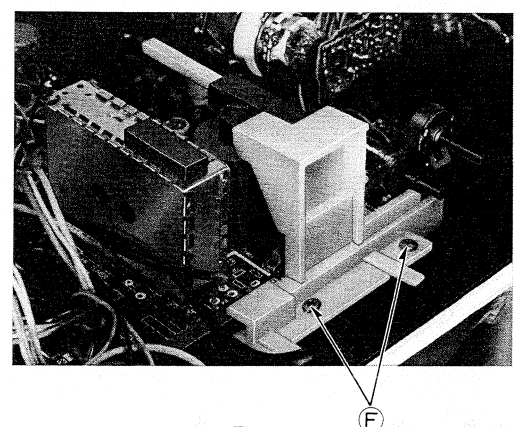


Figure 4

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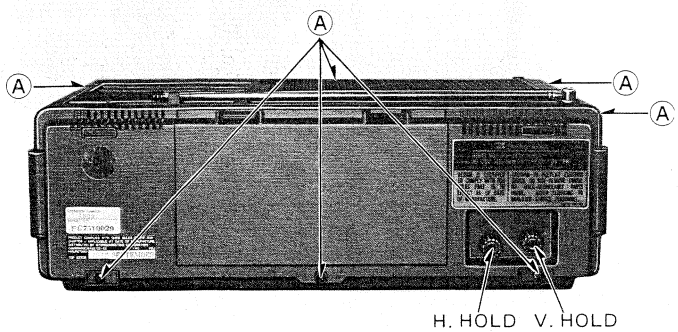

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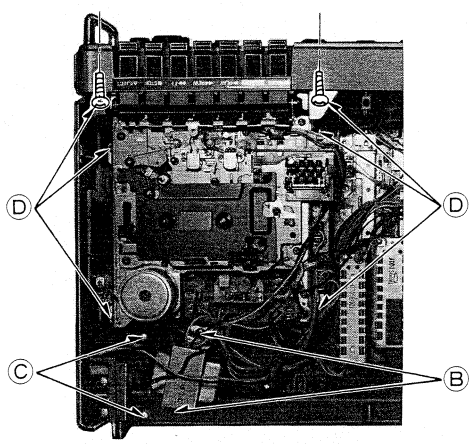

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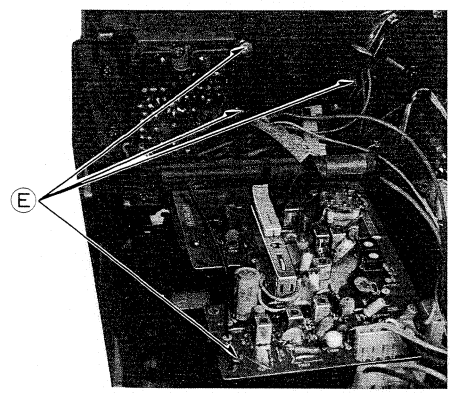

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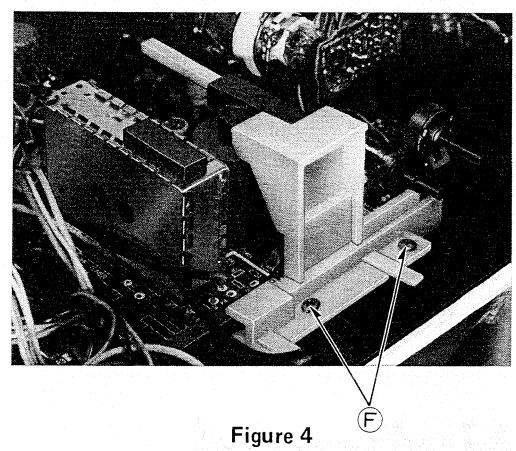


Figure 4

HOW TO DISASSEMBLE THE MECHANISM

Basically, this mechanism can be separated into its upper and lower parts. After separating them, all parts can be easily checked or replaced. Please follow the steps described below.

Both of the upper and the lower base plate are a molded composite made of metal and resin, and considerable care should be taken not to damage the resin part when repairs are made.

1. Figure 5 shows a mechanism which has been removed from the set. In this condition, such main parts as the **motor,** the **tape counter,** the **erase head,** the **recording/playback head,** and the **pressure roller** can be easily replaced.

   When replacing the motor, fix it in direction shown in Figure 8, otherwise, noise may occur at radio reception. (Take note of the position of motor wire.)

2. Separation into upper and lower parts:
   * Remove the three screws in Figure 5 and then remove the chassis cover. In this condition, the **take up reel table** can be replaced.
   * Remove the play spring and the erase head rod spring (shown in Figure 6).
   * Remove the counter belt from the tape counter pulley, and as shown in Figure 8 attach it to the part projecting from the lower base plate.
   * Remove the screws shown in Figure 6.
   * As shown in Figure 7 and 8 the upper and lower parts can be completely separated.

Checking and replacement of parts in the lower part can be accomplished. Note, however, that to replace the flywheel, the flywheel belt and the flywheel retainer must first be removed by removing the screws A and B shown in Figure 9.

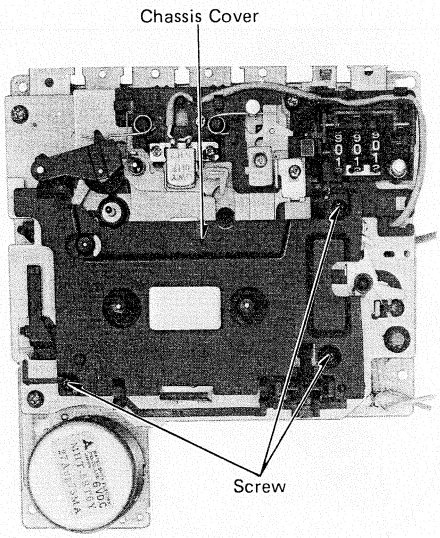


Figure 5

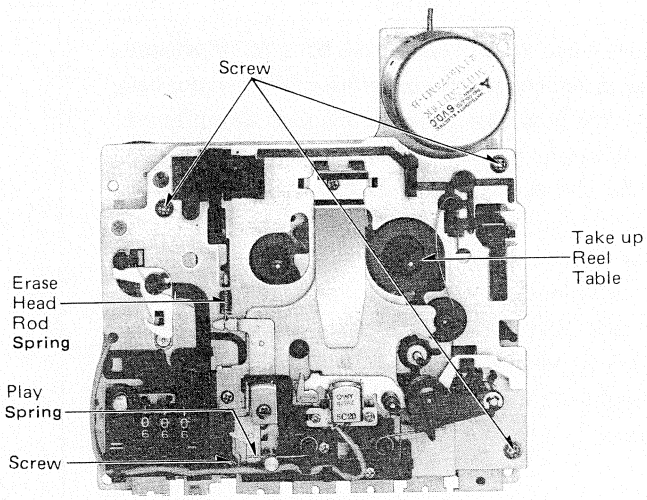


Figure 6

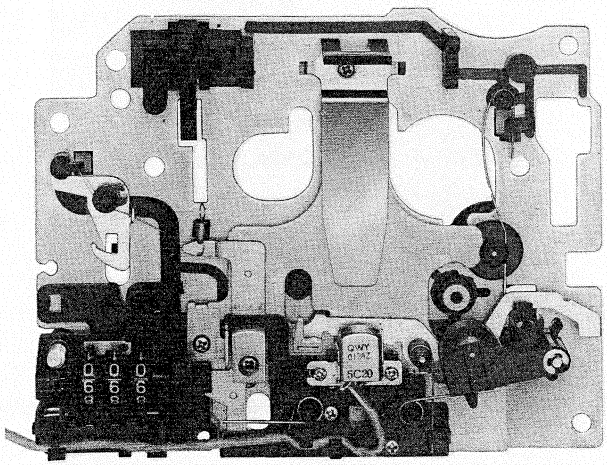


Figure 7

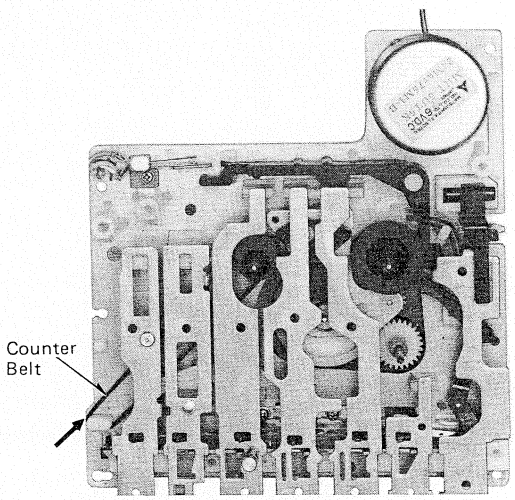


Figure 8

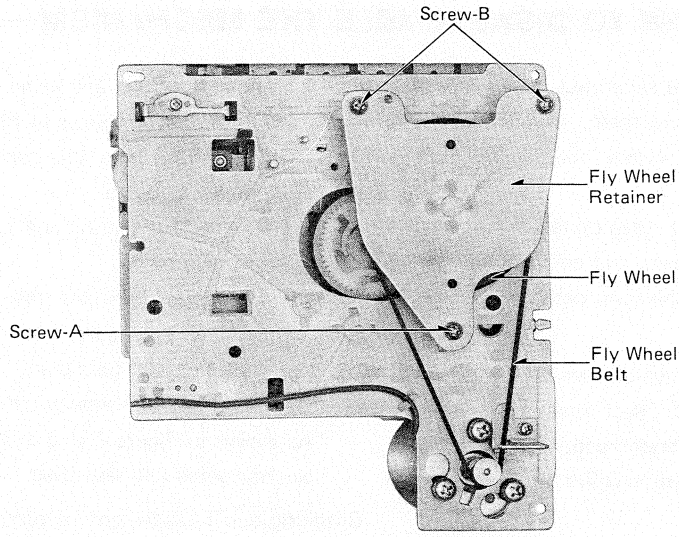


Figure 9

NOTE:

1. There are three small (2 mmϕ) steel balls (M20) between the head base plate and the upper base plate and one ball between the head base plate and the head base pressure plate. Be careful not to lose them during disassembly.
2. Note that the tape counter indicated by number (M21) does not include a counter table when making replacement or ordering parts.
3. When replacing the pause lock spring (M27) and/or pause lock plate (M28), remove the circlip (M26) by using JIG shown in Figure 10.
   If it is not used, the boss (made of resin) may be damaged.

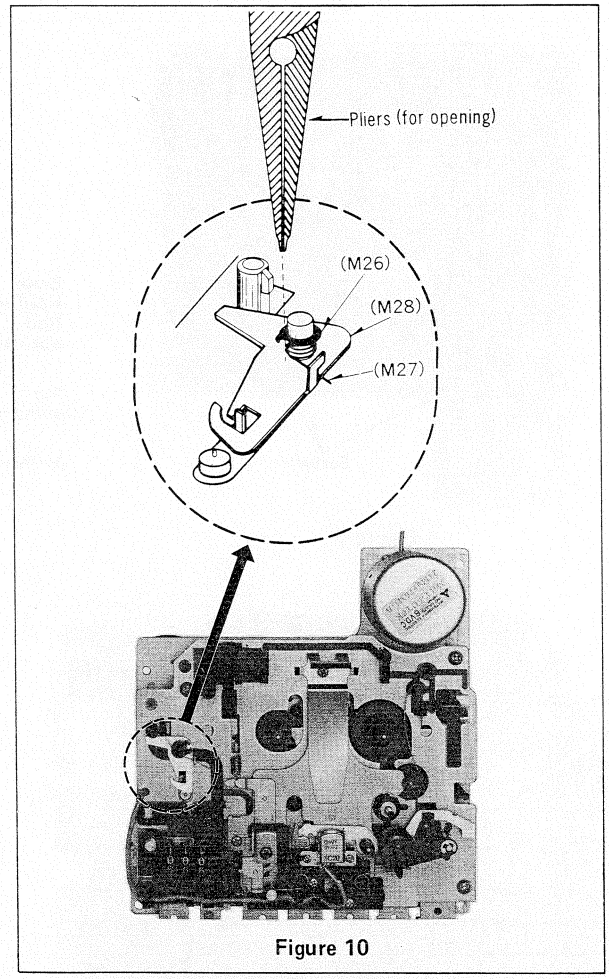


Figure 10

AVR (AUTOMATIC VOLTAGE REGULATOR)

Connect a voltmeter across TP91 and chassis. Next make certain the B+ supply voltage is +11.5 V by Adjust the AVR control VR71 if necessary.

YOKE POSITION

The yoke is secured to the neck of the picture tube, with an angular clamp and screw. To adjust the yoke and correct for picture tilt, loosen the clamp, correct tilt, and retighten the clamp.

CENTERING

The picture centering device consists of two rings located at the rear of the yoke assembly. Each ring has a tab for ease of adjustment. The tabs should be rotated and moved towards or away from each other until the picture is properly centered on the picture tube screen.

AGC (AUTOMATIC GAIN CONTROL)

The adjustment of the AGC control effectively changes the operating point of the, AGC amplifier. Tune the I-F AGC control fully clockwise to set it for maximum gain. In some areas this may cause clipping of the sync pulses, a wiggle in the picture and unstable sync. Turning the I-F AGC control counterclockwise to decrease the gain of the receiver.

TO ADJUST THE AGC PROPERLY

1. Set the channel selector to a station transmitting a strong signal.
2. Turn the R-F AGC control VR19 fully counterclockwise.
3. Adjust the I-F AGC control VR18 to obtain a sharp and clear picture.
   If I-F AGC control VR18 is turned fully clockwise, the input signal strength will be maximum.
4. Observe the input signal, turn the R-F AGC control VR19 clockwise to the point where the snow noise disappers in the picture.
5. Readjust I-F AGC VR18 as above step 3.
6. Check the reception on all channels. If the set does not get a good, clear picture on all channels readjust the R-F AGC and I-F AGC.

VERTICAL LINEARITY AND VERTICAL HEIGHT

These controls VR32 and VR33 should be adjusted simultaneously to give proper vertical size consistent with good vertical linearity.

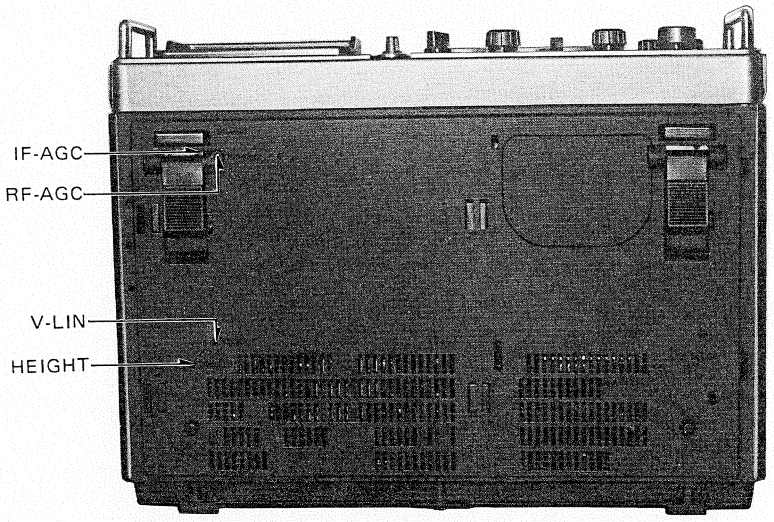


Figure 11

TV TUNER (See Figure 12, 13)

1. Selector SW at TV position and TV selector SW at VHF-Low position.
2. TV tuning counterclockwise and adjust indicator to start point.
3. Turn VR95 counterclockwise. Connect a voltmeter between TP95 and ground, adjust VR95 to 0V ± 0.1V.
4. Set indicator to ch 4 and receive a picture.
5. Adjust VR94 to obtain the best picture.
6. Set TV selector SW to VHF-High position.
7. Set indicator to ch 10 and receive a picture.
8. Adjust VR93 to obtain the best picture.

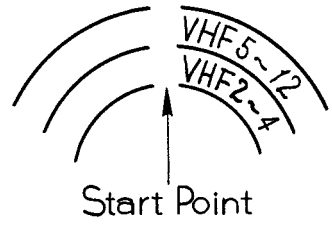


Figure 12

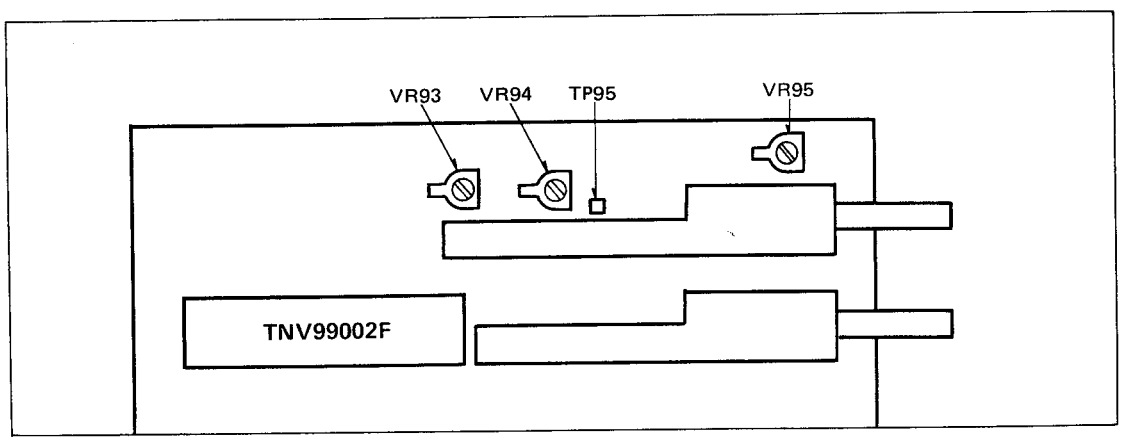


Figure 13

PRESSURE OF PRESSURE ROLLER

1. Set into playback mode.
2. Connect the tension gauge to the pressure roller lever and pull it in the direction of the arrow as shown in Figure 14.
3. Measure the tension at the moment when the pressure roller moves away from the capstan.
   Standard tension; 400 ±60 gr
4. If the tension is out of tolerance, bend the part (a) of pressure roller spring in either direction shown by the arrow.

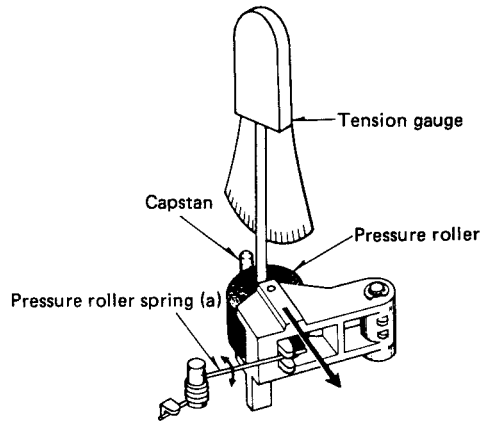


Figure 14

BIAS CURRENT

1. Connect a VTVM to test point 3 (hot end) and test point 4 (cold end).(Location of test points is in Figure 17.)
2. Place unit into record mode.
   Standard voltage: $4\ ^{+1}_{-0.5}$ mV
3. If the voltage is out of tolerance adjust VR3 shown in Figure 17.

BIAS OSCILLATION FREQUENCY

1. Connect a oscilloscope with AF OSC as shown in Figure 15.
2. Place unit into record mode.
3. Adjust AF OSC to obtain the circular and stationary Lissajous' pattern on the oscilloscope. The bias oscillation frequency is indicated by the scale of AF OSC.
   Standard value: 33 ± 5 kHz.
4. If it is out of tolerance, adjust L1 shown in Figure 17.

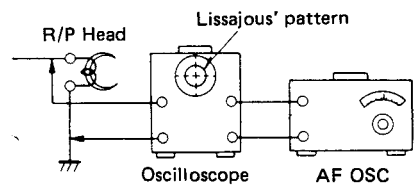


Figure 15

OTHER SPECIFICATIONS FOR REFERENCE (NO ADJUSTABLE)

ITEM	SPECIFICATION	REMARKS
Takeup tension	55 ±15 gr-cm	Use torque meter SRK-CT
Tension of detect piece	65 ±10 gr	–
Wow & flutter	0.3% WRMS	–
Tape speed fluctuation	±3%	–
Standard recording input level	MIC: −70 dB AUX: −20 dB	–
Overall gain	More than 2.5 V	Record 1 kHz tone with standard recording input level, and playing back the tape, read the output value across speaker.
Overall frequency response	1 kHz: 0 dB 150 Hz: −3 ±4 dB 6 kHz: −1 ±4 dB	Record the singnal with 10 dB lower level than standard recording input level.

AM I-F & R-F ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set Volume control to maximum. Set Tape/radio/TV to Radio
Set tone control to treble. **Note:** Adjustment parts are shown in Figure 18.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KHz (400 Hz Mod.)	Point of non-interference (on/about 600KHz.	Output meter across EXT SP jack.	L1010, L1011 L1012	Adjust for maximum output.
	Same as above	600KHz (400 Hz Mod.)	600KHz	Output meter across EXT SP jack.	L1001 (ANT coil)	Adjust for maximum output.
	Same as above	1,400KHz (400 Hz Mod.)	1,400KHz	Output meter across EXT SP jack.	C1004	Adjust for maximum output.

Refer Fig. 16 for preparation

SW1	See Fig. 16	2.3MHz	2.3MHz	Between Z1 and Z2	L1002	Adjust for maximum output.
	Same as above	7MHz	7MHz	Between Z1 and Z2	C1006	Adjust for maximum output.
SW2	Same as above	7MHz	7MHz	Between Z1 and Z2	L1003	Adjust for maximum output.
	Same as above	22MHz	22MHz	Between Z1 and Z2	C1007	Adjust for maximum output.

Note: 1. Cement antenna bobbin with wax after completing alignment.
2. Make certain that speaker system or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

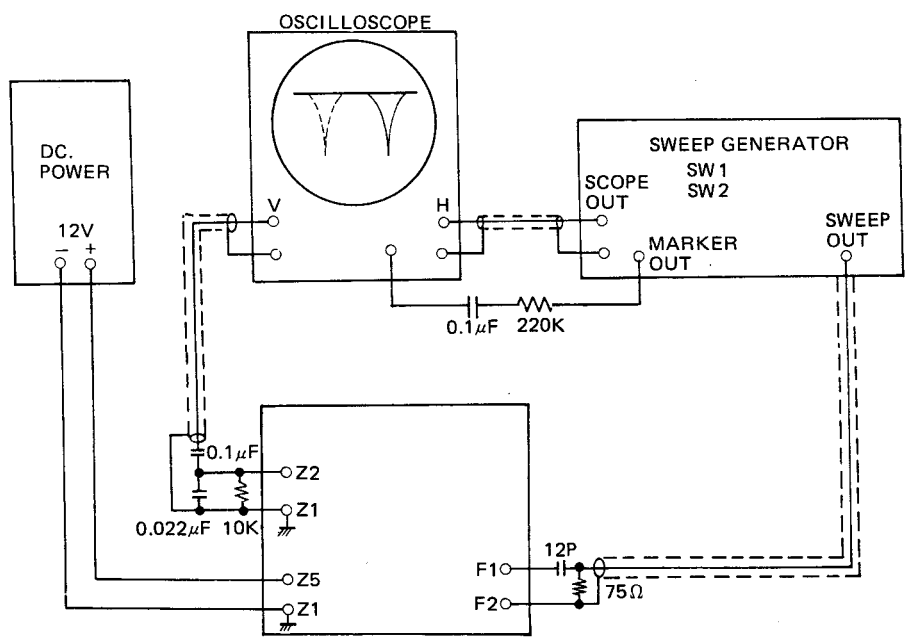


Figure 16

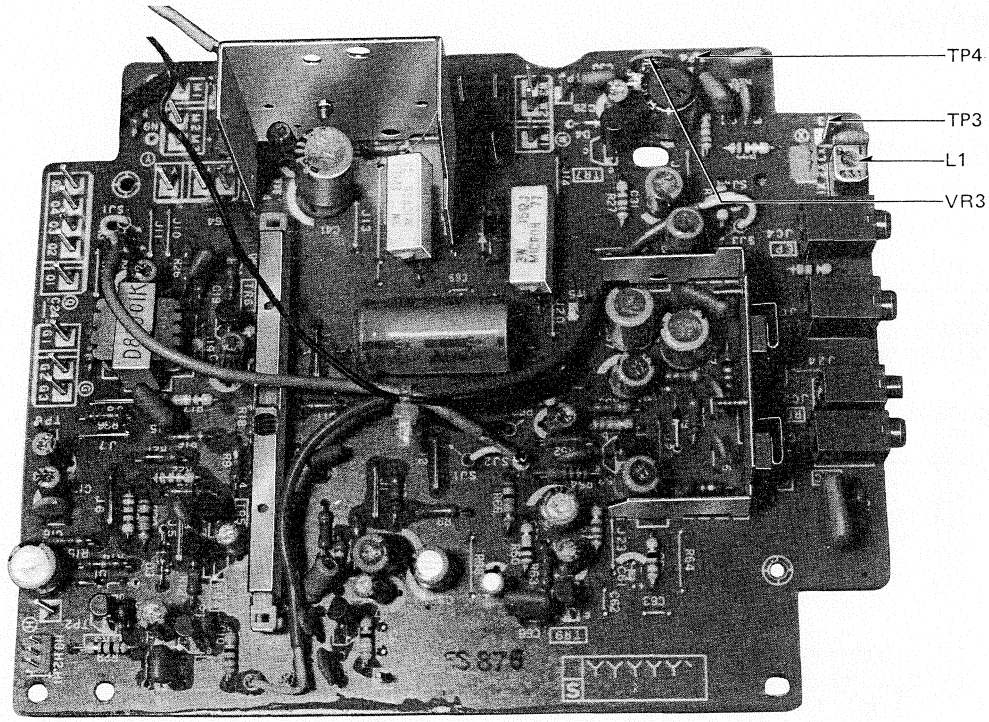


Figure 17

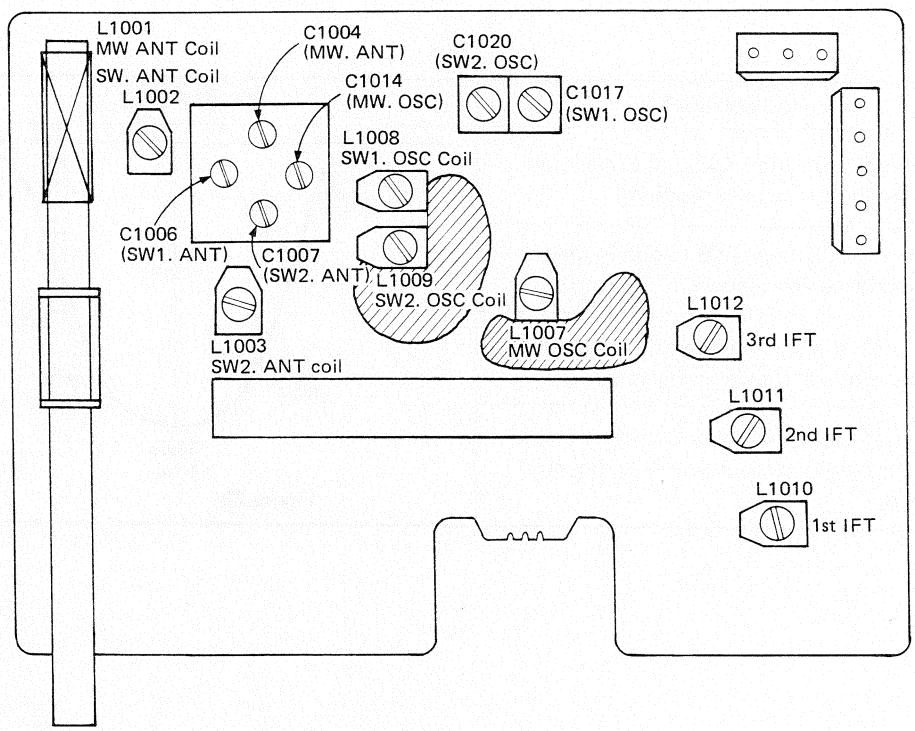


Figure 18

VIDEO I-F ALIGNMENT

Preparation

Power Supply ..... See Figure 19.
Oscilloscope, Sweep Generator ..... See Figure 19.

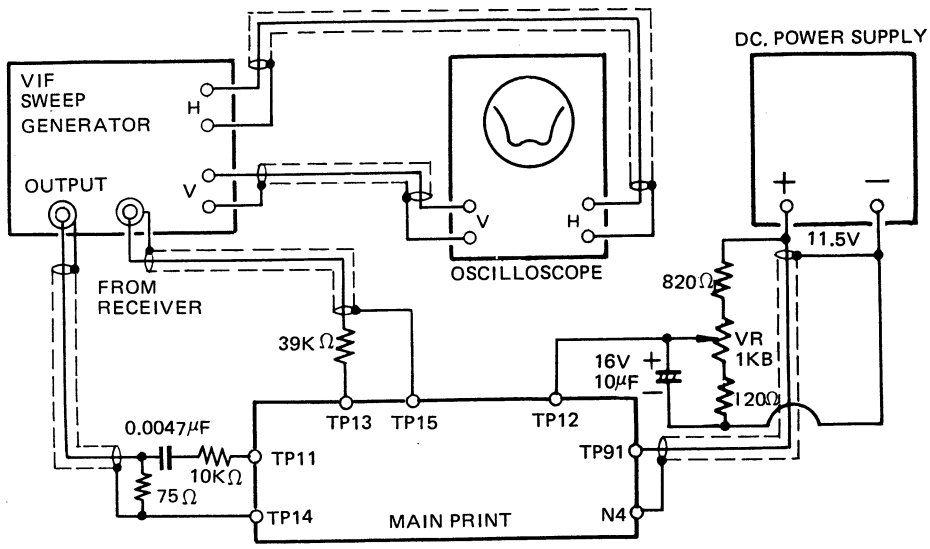


Figure 19

ALIGNMENT

Step	ALIGNMENT	WAVEFORM
1	Adjust both L104 and L105 to the maximum gain at 38.90 MHz marker position.	
2	Adjust both L107 and L108 to obtain the correct response curve as shown in Figure 20.	
3	Adjust L103 to the minimum gain at 40.40 MHz. marker position as shown in Figure 20.	
4	Adjust both L101 and Tuner Convertor coil to obtain the correct response curve as shown in Figure 20.	

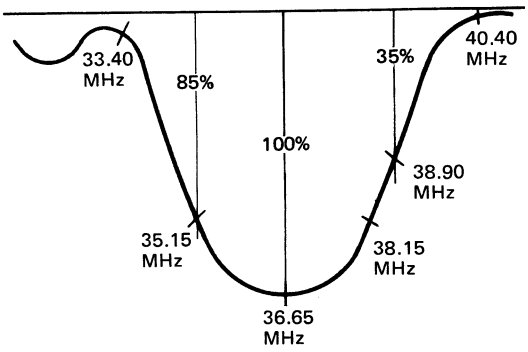


Figure 20

SOUND I-F ALIGNMENT

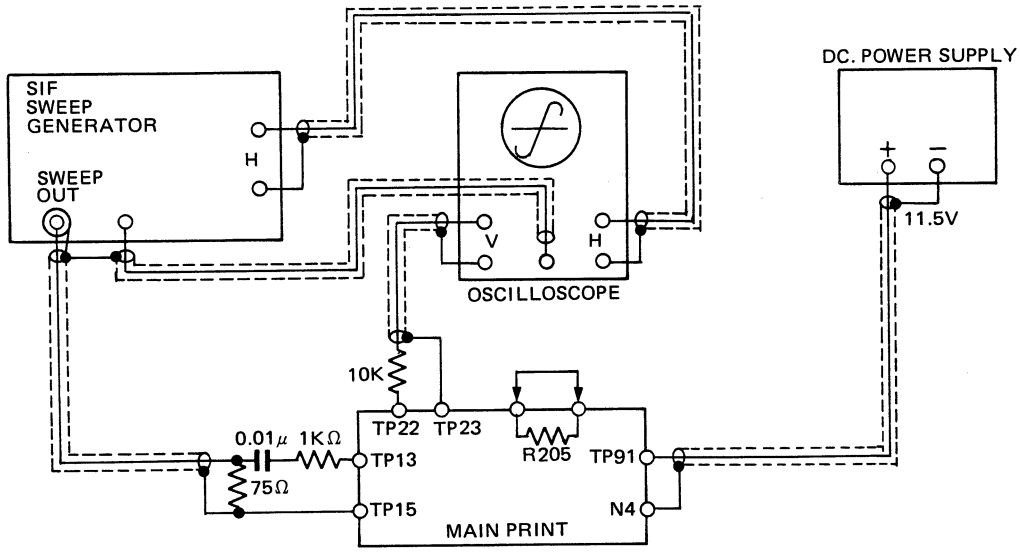


Figure 21

ALIGNMENT

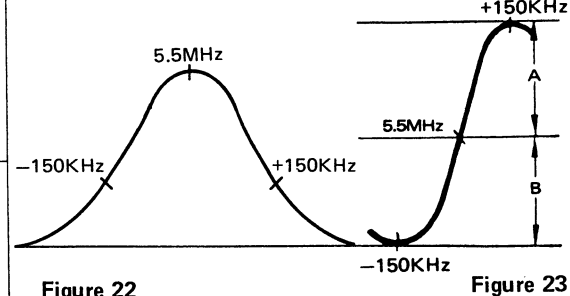
Step	ALIGNMENT	WAVEFORM
1	Adjust both L201 and L202 to the maximum gain at 5.5MHz. marker position as shown in Fig. 22.	
2	Adjust L202 until the 5.5MHz marker is at the center of slanted line as shown in Fig. 23.	

Figure 22

Figure 23

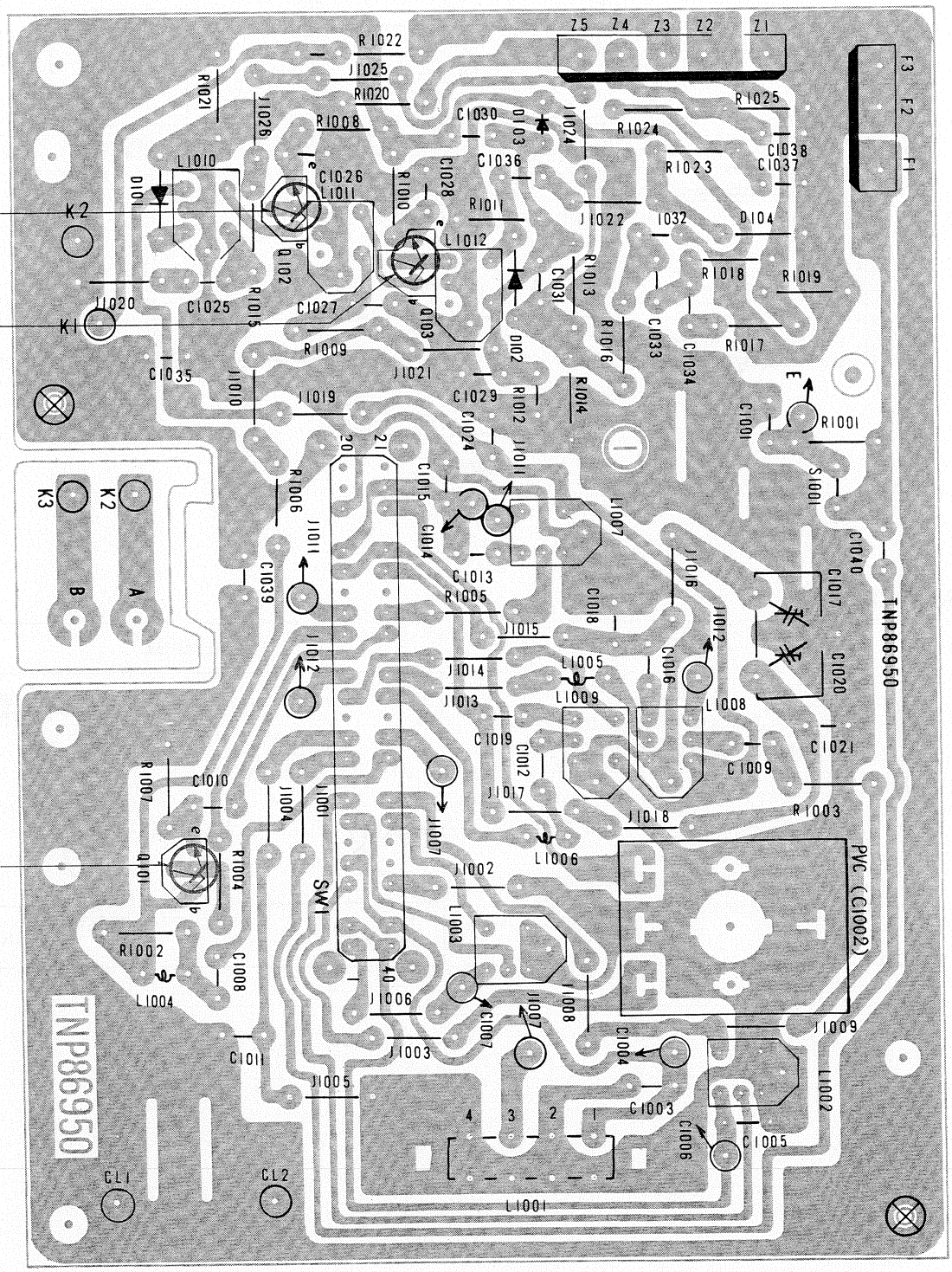
CONDUCTOR VIEWS

RADIO-BOARD TNP86950-31H

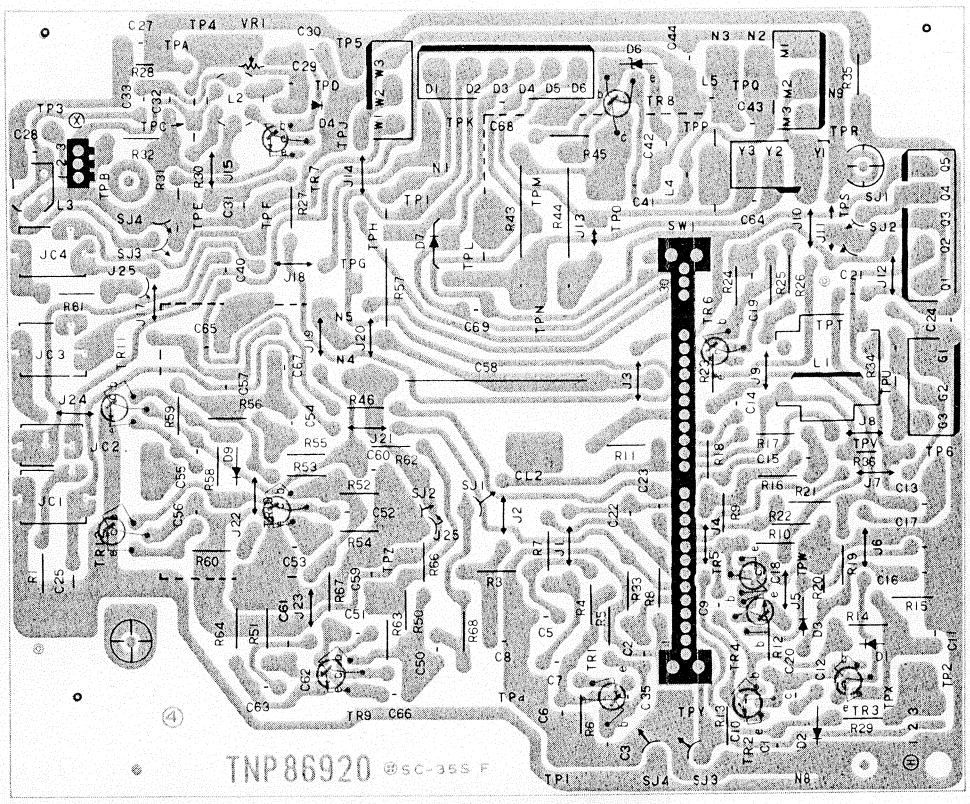
Q102	
E	0.5V
B	1.2V
C	5.9V

Q103	
E	0.5V
B	1.2V
C	5.9V

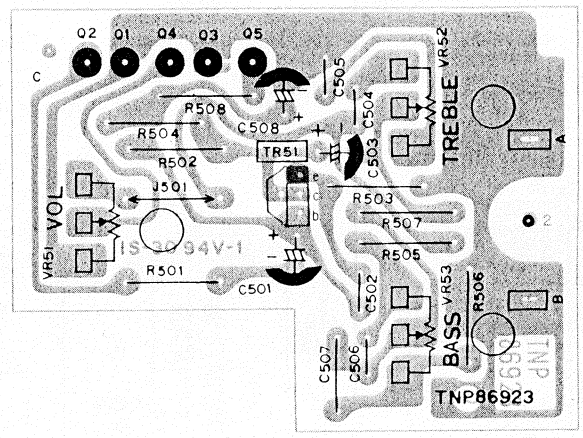
Q101	
E	0.5V
B	1.1V
C	5.8V



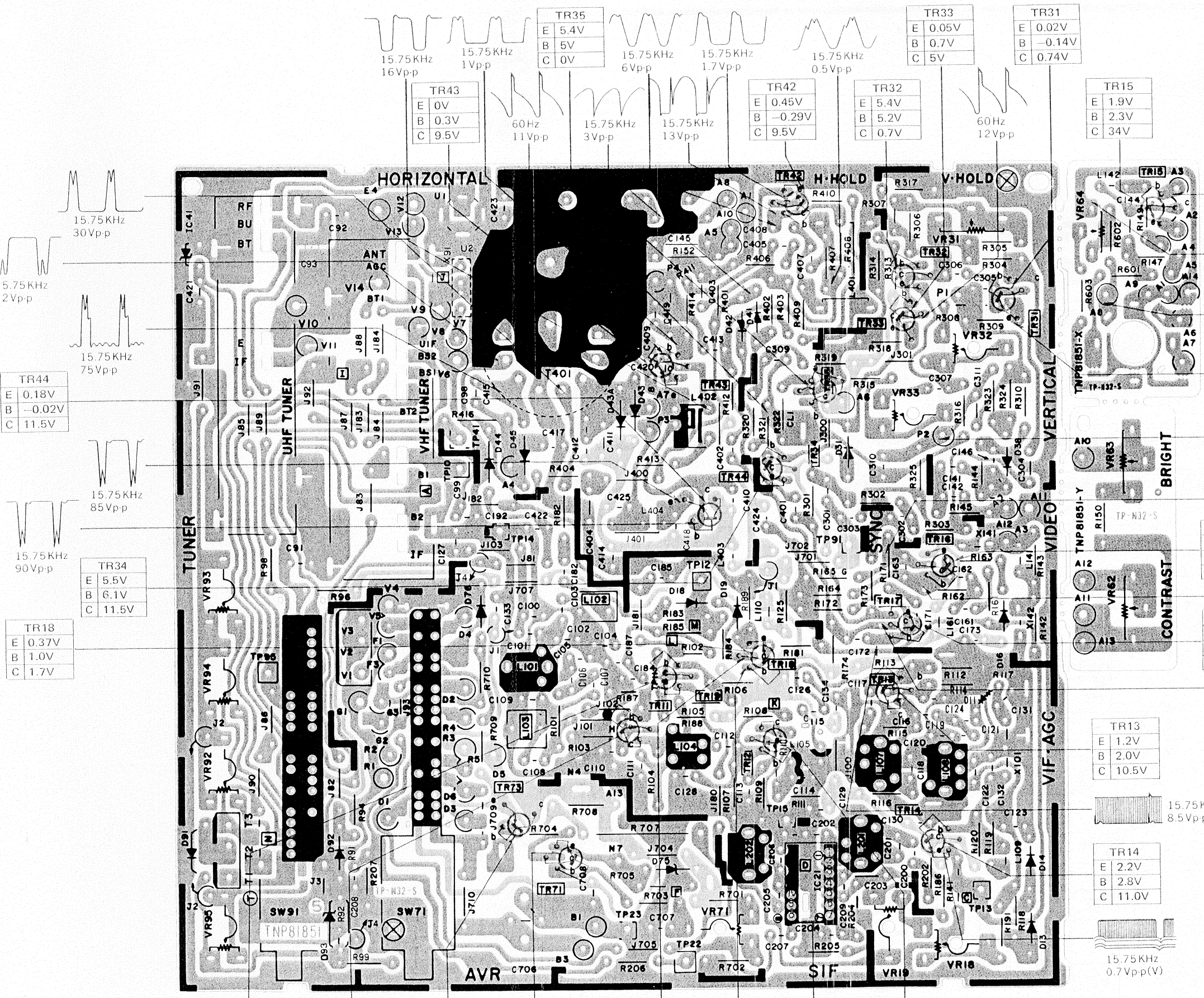
TAPE-BOARD TNP86920-31



TONE-BOARD TNP86923-11



MAIN-BOARD TNP81851-31H, TNP81851H2X, TNP81851H1Y



TR43	
E	0V
B	0.3V
C	9.5V

TR35	
E	5.4V
B	5V
C	0V

TR42	
E	0.45V
B	−0.29V
C	9.5V

TR32	
E	5.4V
B	5.2V
C	0.7V

TR33	
E	0.05V
B	0.7V
C	5V

TR31	
E	0.02V
B	−0.14V
C	0.74V

TR15	
E	1.9V
B	2.3V
C	34V

TR44	
E	0.18V
B	−0.02V
C	11.5V

TR34	
E	5.5V
B	6.1V
C	11.5V

TR18	
E	0.37V
B	1.0V
C	1.7V

TR13	
E	1.2V
B	2.0V
C	10.5V

TR14	
E	2.2V
B	2.8V
C	11.0V

TR19	
E	8.2V
B	7.5V
C	3.3V

TR11	
E	2.8V
B	3.5V
C	7.5V

TR73	
E	—
B	—
C	11.5V

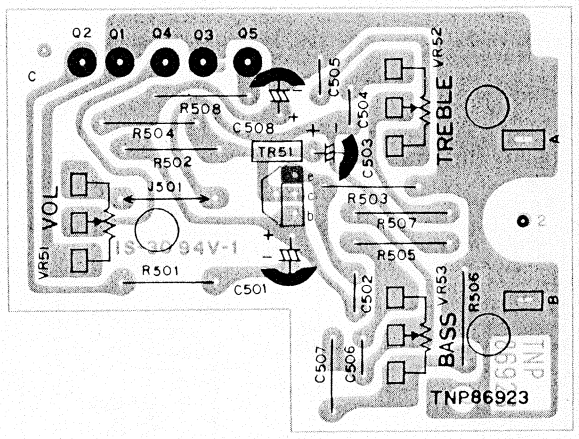
TR71	
E	6.5V
B	7V
C	—

IC21			
1	2V	8	6.8V
2	2V	9	3.6V
3	0V	10	3.6V
4	0V	11	0V
5	10V	12	5V
6	2.7V	13	5.2V
7	7.5V	14	0.7V

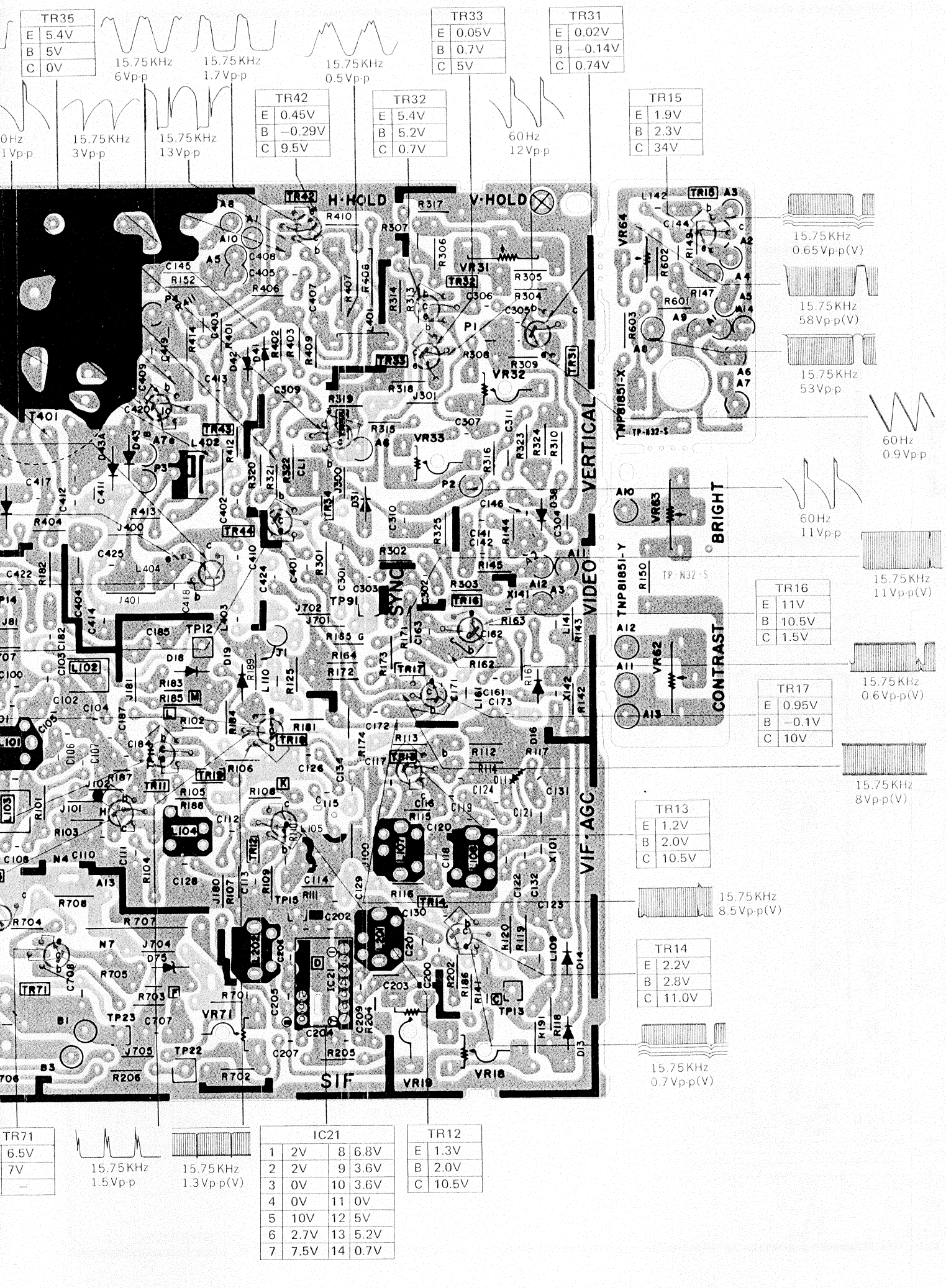
TR12	
E	1.3V
B	2.0V
C	10.5V

15.75KHz 16Vp-p
15.75KHz 1Vp-p
60Hz 11Vp-p
15.75KHz 3Vp-p
15.75KHz 13Vp-p
15.75KHz 6Vp-p
15.75KHz 1.7Vp-p
15.75KHz 0.5Vp-p
60Hz 12Vp-p
15.75KHz 30Vp-p
15.75KHz 12Vp-p
15.75KHz 75Vp-p
15.75KHz 85Vp-p
15.75KHz 90Vp-p
15.75KHz 8.5Vp-p
15.75KHz 0.7Vp-p(V)
15.75KHz 1.5Vp-p
15.75KHz 1.3Vp-p(V)

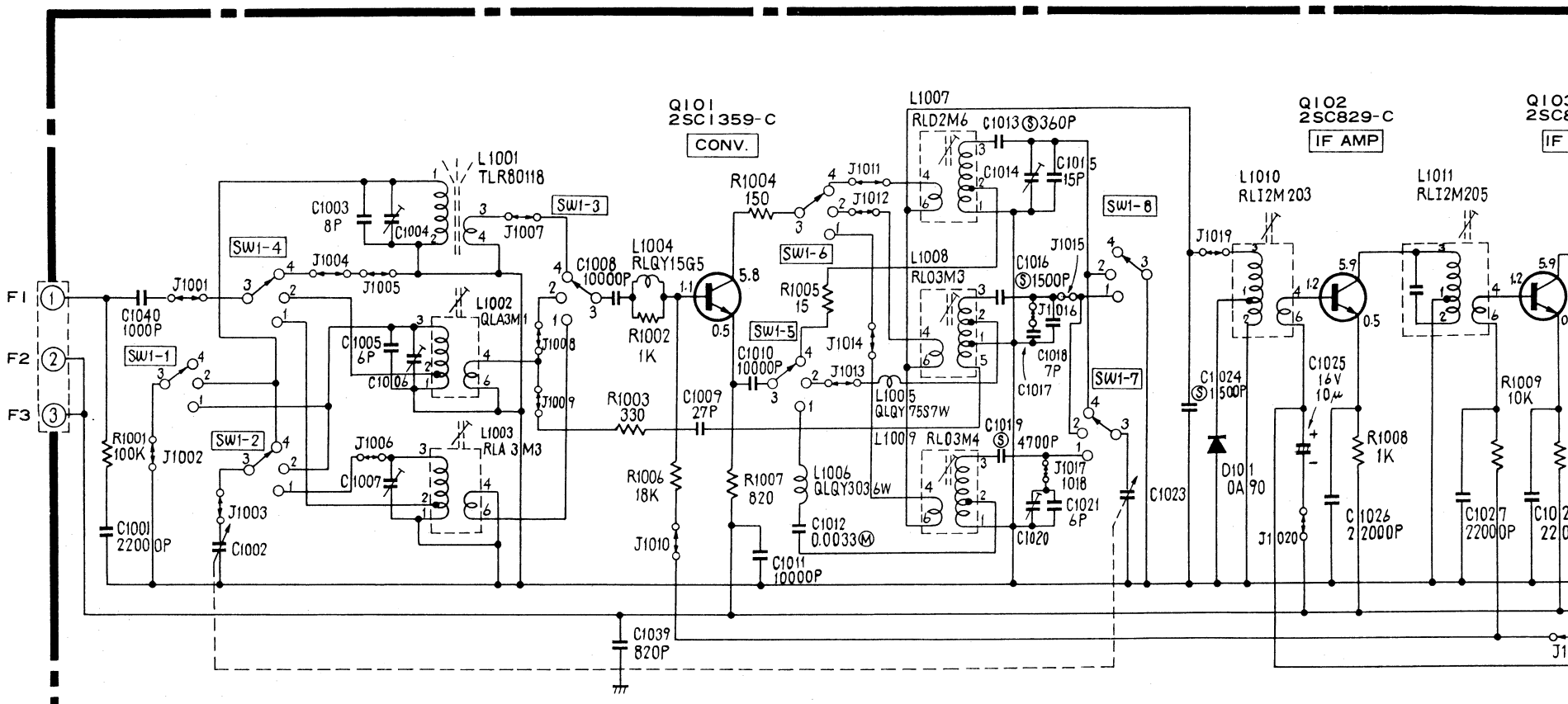
TONE-BOARD TNP86923-11



RD TNP81851-31H, TNP81851H2X, TNP81851H1Y



SCHEMATIC DIAGRAM FOR RADIO, TAPE

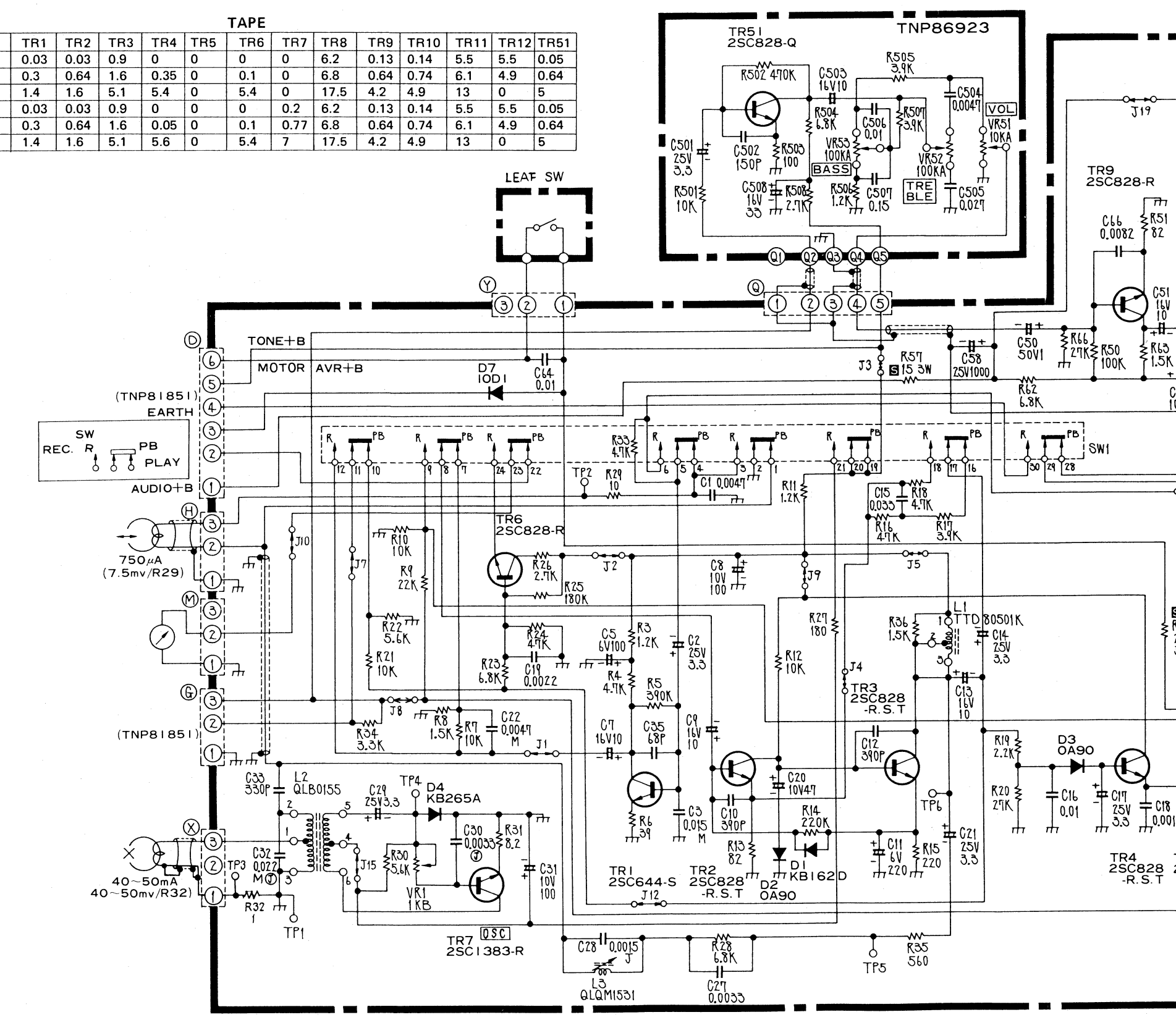


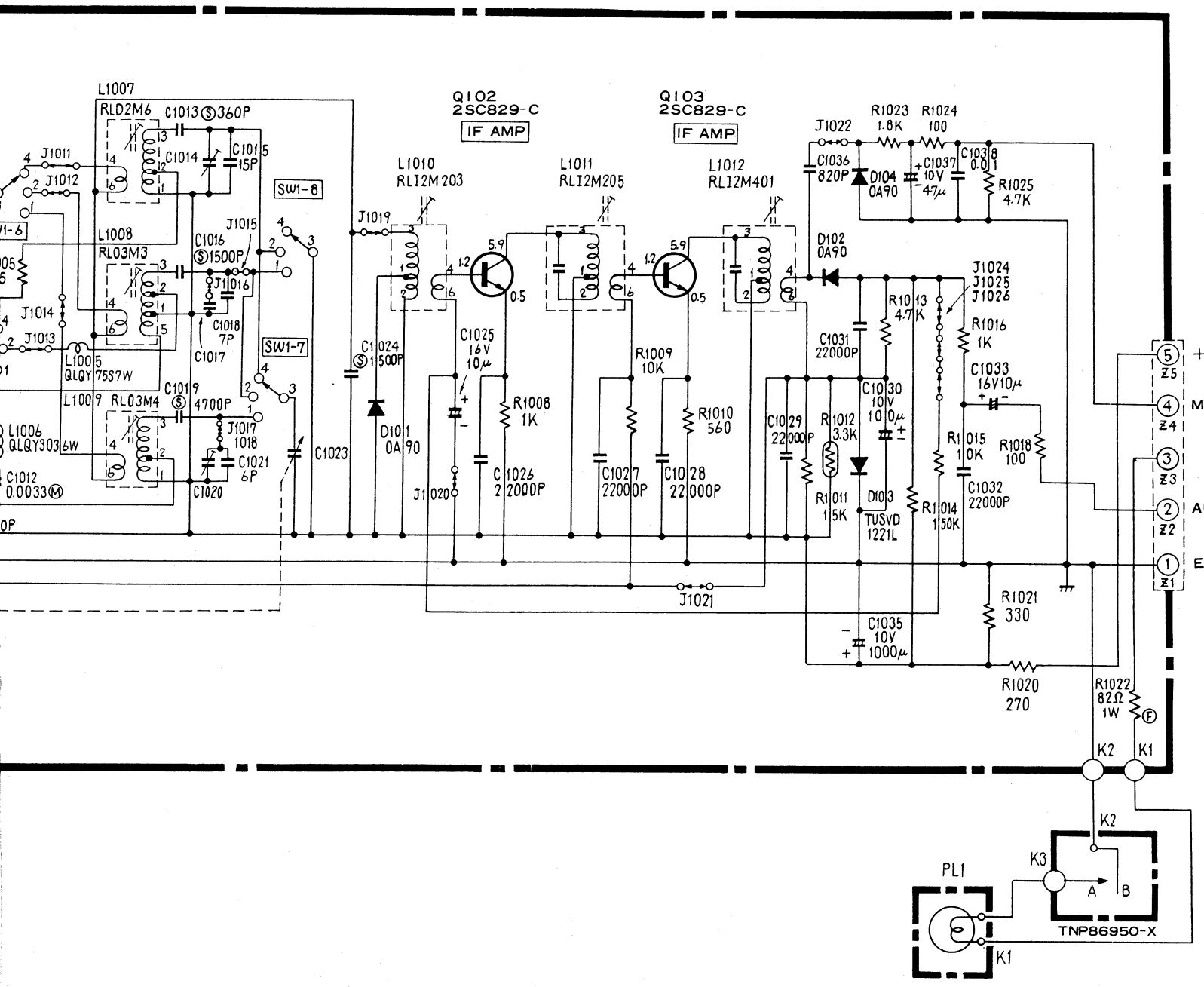
RADIO

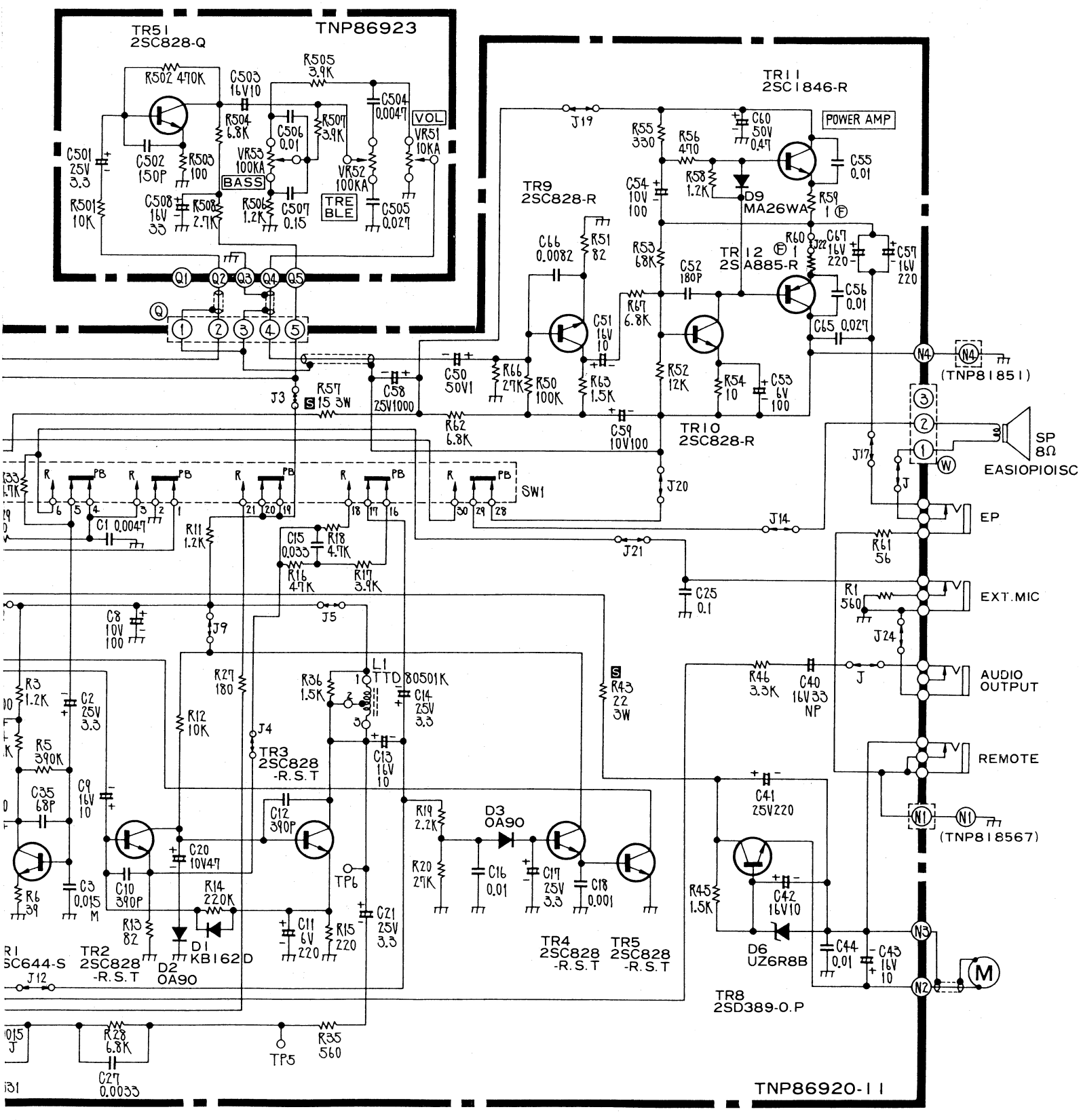
	Q101	Q102	Q103
E	0.5	0.5	0.5
B	1.1	1.2	1.2
C	5.7	5.9	5.9

TAPE

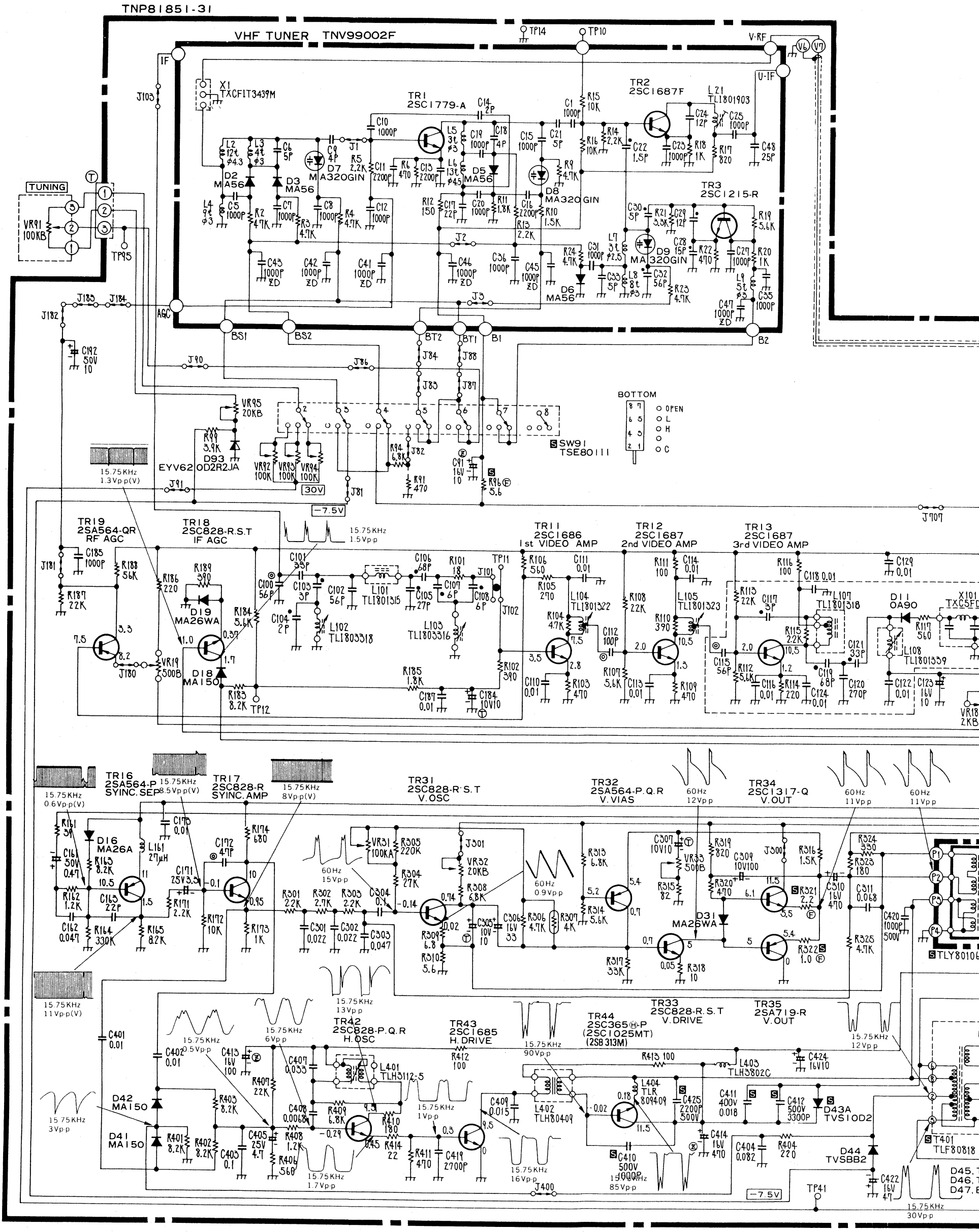
		TR1	TR2	TR3	TR4	TR5	TR6	TR7	TR8	TR9	TR10	TR11	TR12	TR51
PLAY	E	0.03	0.03	0.9	0	0	0	0	6.2	0.13	0.14	5.5	5.5	0.05
	B	0.3	0.64	1.6	0.35	0	0.1	0	6.8	0.64	0.74	6.1	4.9	0.64
	C	1.4	1.6	5.1	5.4	0	5.4	0	17.5	4.2	4.9	13	0	5
REC	E	0.03	0.03	0.9	0	0	0	0.2	6.2	0.13	0.14	5.5	5.5	0.05
	B	0.3	0.64	1.6	0.05	0	0.1	0.77	6.8	0.64	0.74	6.1	4.9	0.64
	C	1.4	1.6	5.1	5.6	0	5.4	7	17.5	4.2	4.9	13	0	5



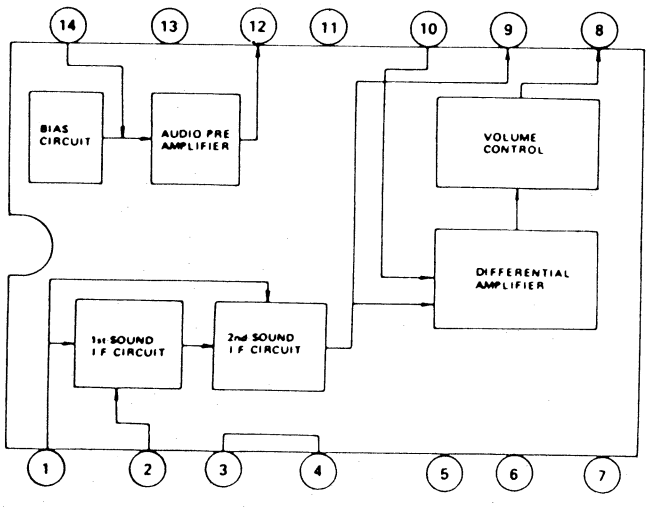

L1007
RLD2M6
C1013 Ⓢ360P
C1014
C1015 15P
J1011
J1012
SW1-6
L1008
RL03M3
C1016 Ⓢ1500P
J1015
C1018 7P
C1017
J1016
J1014
J1013
L1005 QLQY75S7W
L1009 RL03M4
C1019 Ⓢ 4700P
J1017 1018
C1021 6P
C1020
C1023
L1006 QLQY303 6W
C1012 0.0033Ⓜ
Q102 2SC829-C
IF AMP
Q103 2SC829-C
IF AMP
L1010 RLI2M203
L1011 RLI2M205
L1012 RLI2M401
J1019
C1024 Ⓢ1500P
D101 0A90
C1025 16V 10μ
R1008 1K
J1020
C1026 2200OP
R1009 10K
C1027 22000P
R1010 560
C10 28 22000P
J1021
J1022
R1023 1.8K
R1024 100
C1036 820P
D104 0A90
C1037 10V 47μ
C1038 0.01
R1025 4.7K
D102 0A90
J1024 J1025 J1026
C1031 22000P
R10 13 4.7K
R1016 1K
C1033 16V10μ
C10 30 10V 10 0μ
C10 29 22000P
R1012 3.3K
R1011 1.5K
DI03 TUSVD 1221L
R1014 150K
R1015 10K
R1018 100
C1032 22000P
R1021 330
C1035 10V 1000μ
R1020 270
R1022 82Ω 1W Ⓕ
K2
K1
+B
METER
AUDIO
E
PL1
K3
A
B
TNP86950-X


TNP86923
TR51 2SC828-Q
R502 470K
C503 16V10
R505 3.9K
C504 0.004Ⓜ
VOL
VR51 10KA
R504 6.8K
C506 0.01
R507 3.9K
C501 25V 3.3
C502 150P
R503 100
VR53 100KA
BASS
VR52 100KA
TRE BLE
C505 0.02Ⓜ
R501 10K
C508 16V 33
R508 2.7K
R506 1.2K
C507 0.15
Q1 Q2 Q3 Q4 Q5
TR11 2SC1846-R
POWER AMP
J19
R55 330
R56 470
C60 50V 0.4Ⓜ
C55 0.01
TR9 2SC828-R
C54 10V 100
R58 1.2K
D9 MA26WA
R59 1 Ⓕ
C66 0.0082
R51 82
R53 68K
TR12 Ⓕ 1 2SA885-R
R60 1
C67 16V 220
C57 16V 220
C52 180P
C56 0.01
R67 6.8K
C65 0.02Ⓜ
C51 16V 10
R66 27K
R50 100K
R65 1.5K
R52 12K
R54 10
C53 6V 100
C50 50V1
C58 25V1000
R57 S 15 3W
R62 6.8K
C59 10V100
TR10 2SC828-R
J20
SW1
R PB
C1 0.004Ⓜ
R11 1.2K
C15 0.033
R18 4.7K
R16 4.7K
R17 3.9K
J14
J21
C25 0.1
J17
J
SP 8Ω
EASIOPIOISC
EP
R61 56
EXT.MIC
R1 560
J24
AUDIO OUTPUT
REMOTE
R46 3.3K
C40 16V33 NP
R43 22 3W
C41 25V220
R45 1.5K
C42 16V10
D6 UZ6R8B
C44 0.01
C43 16V 10
TR8 2SD389-0.P
N4
(TNP81851)
N1
(TNP818567)
N3
N2
M
C8 10V 100
J9
J5
J4
L1 TTD 80501K
R27 180
R36 1.5K
C14 25V 3.3
R12 10K
TR3 2SC828 -R.S.T
C13 16V 10
R3 1.2K
C2 25V 3.3
R5 390K
C35 68P
C9 16V 10
C12 390P
C20 10V47
C10 390P
C3 0.015 M
R14 220K
R13 82
D1 KB162D
D2 0A90
C11 6V 220
R15 220
C21 25V 3.3
TR2 2SC828 -R.S.T
TR4 2SC828 -R.S.T
TR5 2SC828 -R.S.T
R19 2.2K
D3 0A90
R20 27K
C16 0.01
C17 25V 3.3
C18 0.001
TP6
TP5
R35 560
R28 6.8K
C27 0.003Ⓜ
J12
TNP86920-11

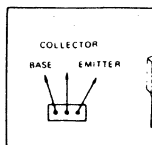
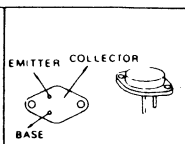
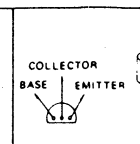
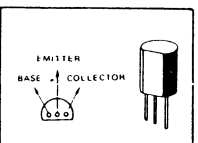
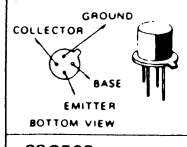
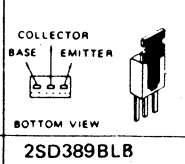
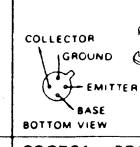
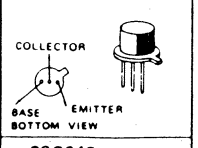
SCHEMATIC DIAGRAM FOR MODEL T



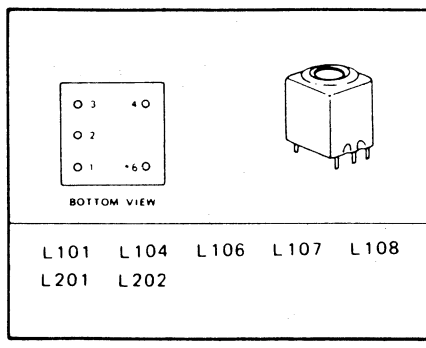
IC21 AN240



TRANSISTOR BASE INFORMATION

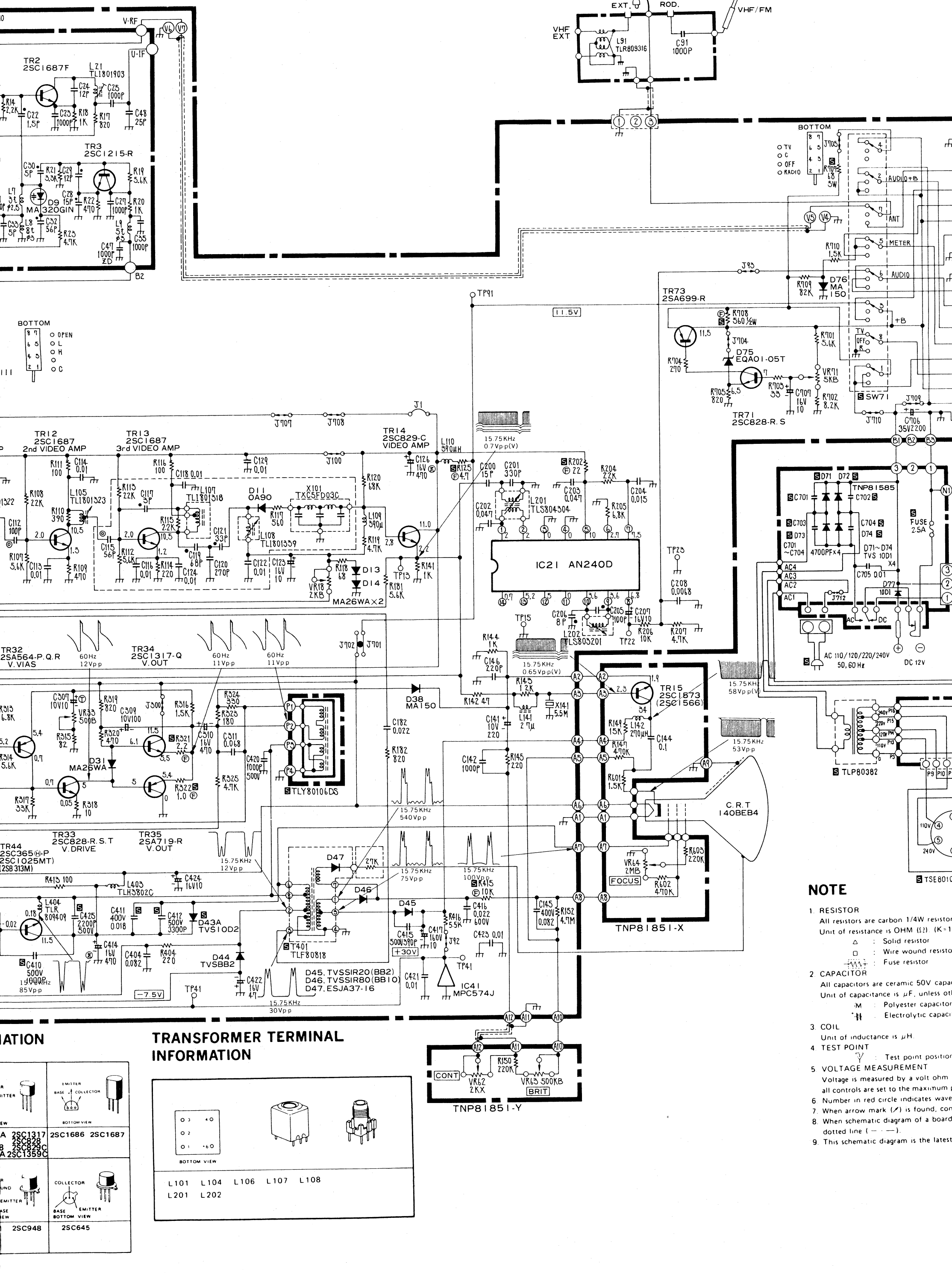
			
2SC1556	2SC1025MT	2SA564A 2SC1317 2SA719 2SC828 2SC1318 2SC829C 2SC828A 2SC1359C	2SC1686 2SC1687
			
2SC563	2SD389BLB	2SC761 2SC948	2SC645

TRANSFORMER TERMINA INFORMATION



L101 L104 L106 L107 L108
L201 L202

DIAGRAM FOR MODEL TR-5000E (Chassis Family No. T509)



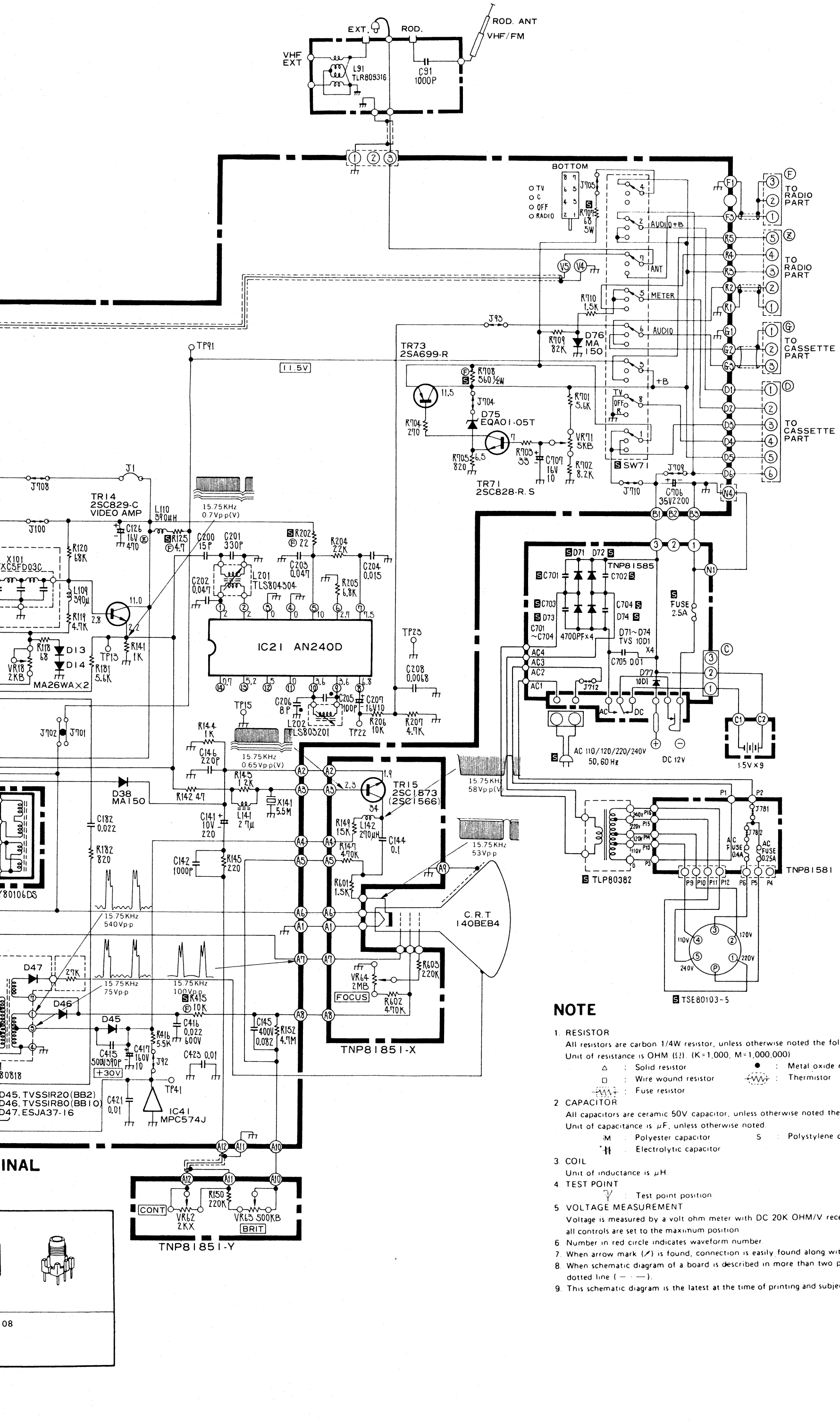
NOTE

1. RESISTOR
   All resistors are carbon 1/4W resistor
   Unit of resistance is OHM (Ω). (K=1
   △ : Solid resistor
   □ : Wire wound resisto
   : Fuse resistor
2. CAPACITOR
   All capacitors are ceramic 50V capac
   Unit of capacitance is μF, unless oth
   M : Polyester capacitor
   : Electrolytic capaci
3. COIL
   Unit of inductance is μH.
4. TEST POINT
   : Test point position
5. VOLTAGE MEASUREMENT
   Voltage is measured by a volt ohm
   all controls are set to the maximum
6. Number in red circle indicates wave
7. When arrow mark (↗) is found, con
8. When schematic diagram of a board
   dotted line (— · —).
9. This schematic diagram is the latest

TRANSFORMER TERMINAL INFORMATION

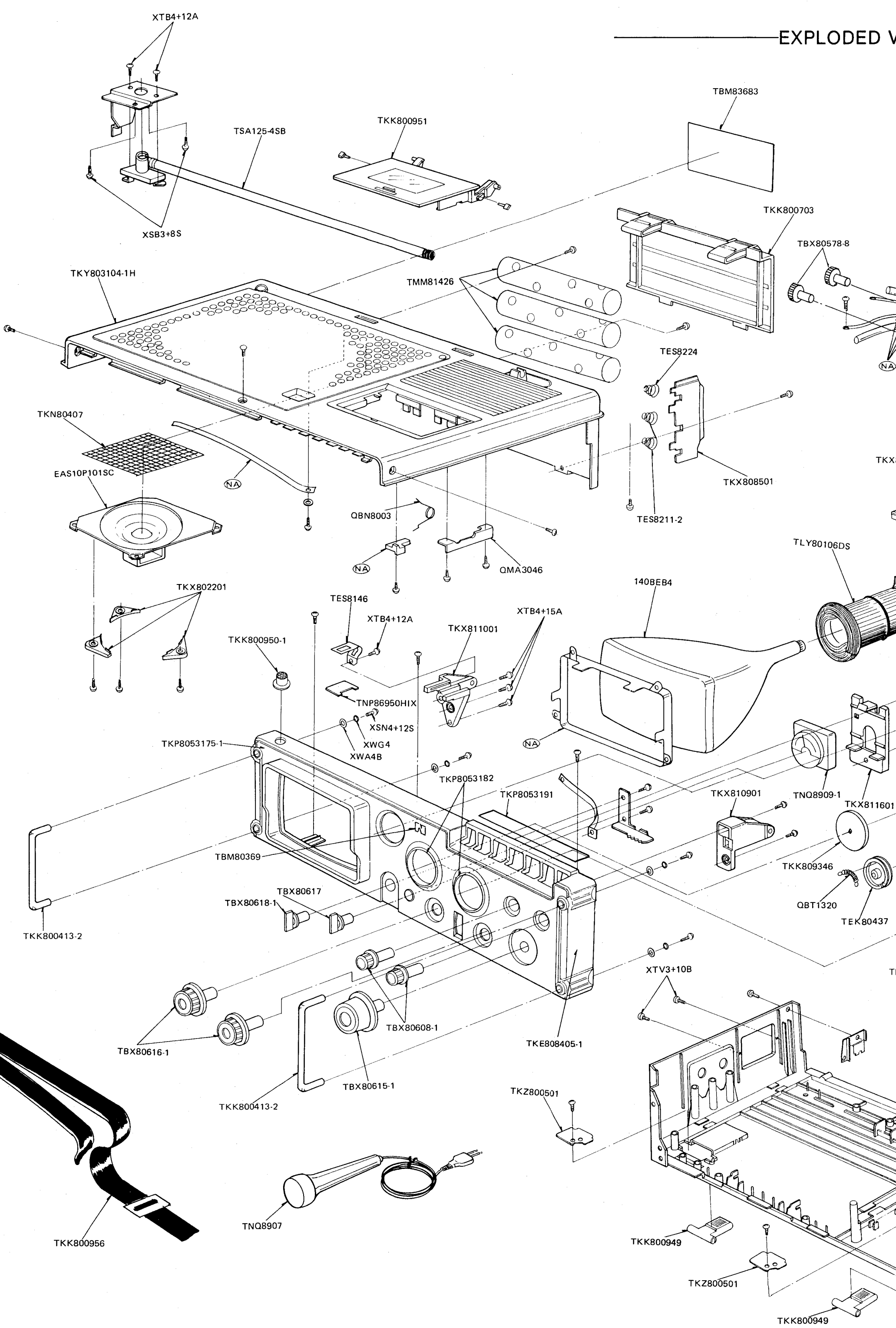
IATION

TR-5000E (Chassis Family No. T509)

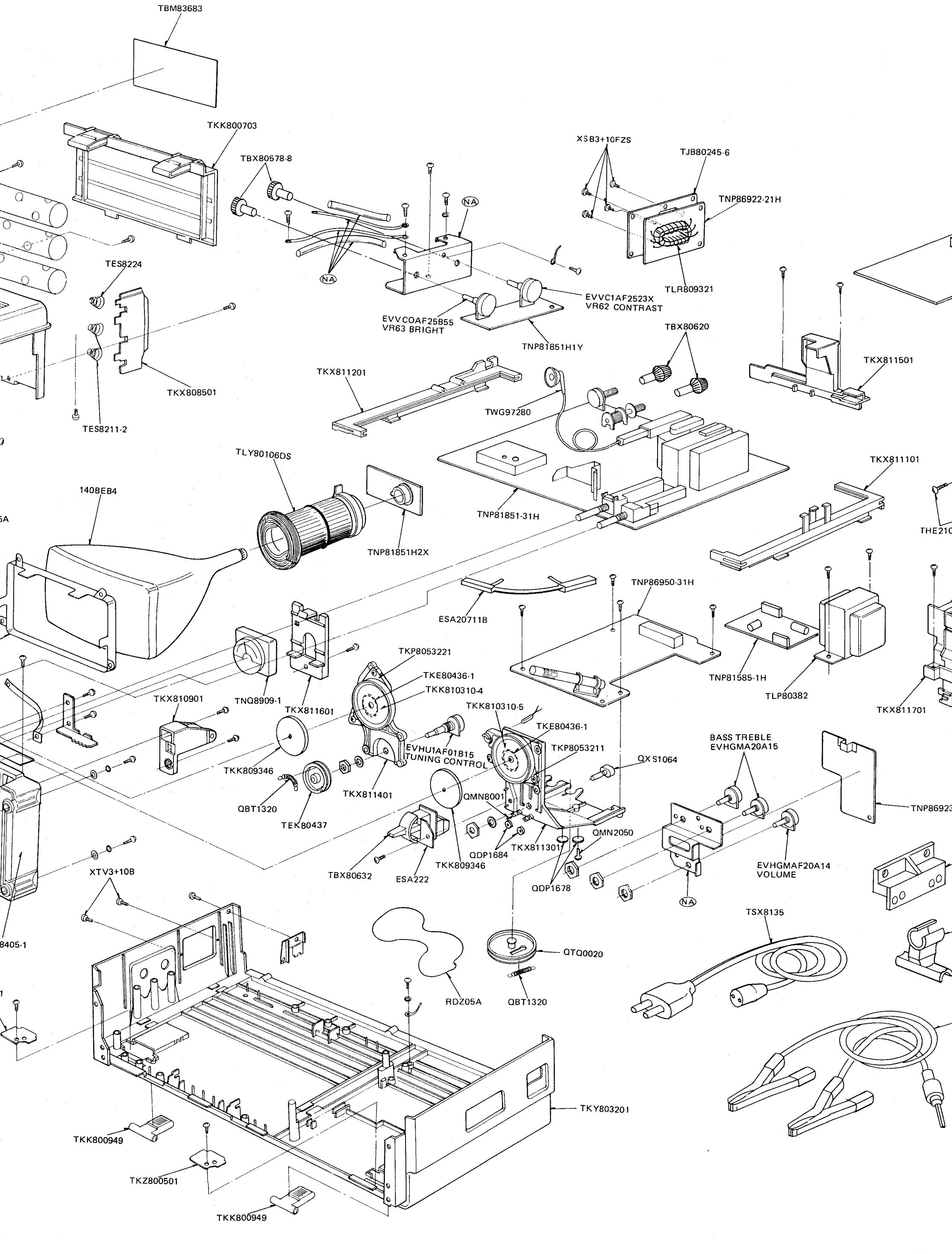


NOTE

1. RESISTOR
   All resistors are carbon 1/4W resistor, unless otherwise noted the following marks.
   Unit of resistance is OHM (Ω). (K=1,000, M=1,000,000)
   - △ : Solid resistor
   - ● : Metal oxide resistor
   - □ : Wire wound resistor
   - Thermistor
   - Fuse resistor
2. CAPACITOR
   All capacitors are ceramic 50V capacitor, unless otherwise noted the following marks.
   Unit of capacitance is μF, unless otherwise noted.
   - M : Polyester capacitor
   - S : Polystylene capacitor
   - Electrolytic capacitor
3. COIL
   Unit of inductance is μH.
4. TEST POINT
   - Test point position
5. VOLTAGE MEASUREMENT
   Voltage is measured by a volt ohm meter with DC 20K OHM/V receiving normal signal, when all controls are set to the maximum position.
6. Number in red circle indicates waveform number.
7. When arrow mark (↗) is found, connection is easily found along with the direction of an arrow.
8. When schematic diagram of a board is described in more than two places, they are encircled with dotted line (— · —).
9. This schematic diagram is the latest at the time of printing and subject to change without notice.

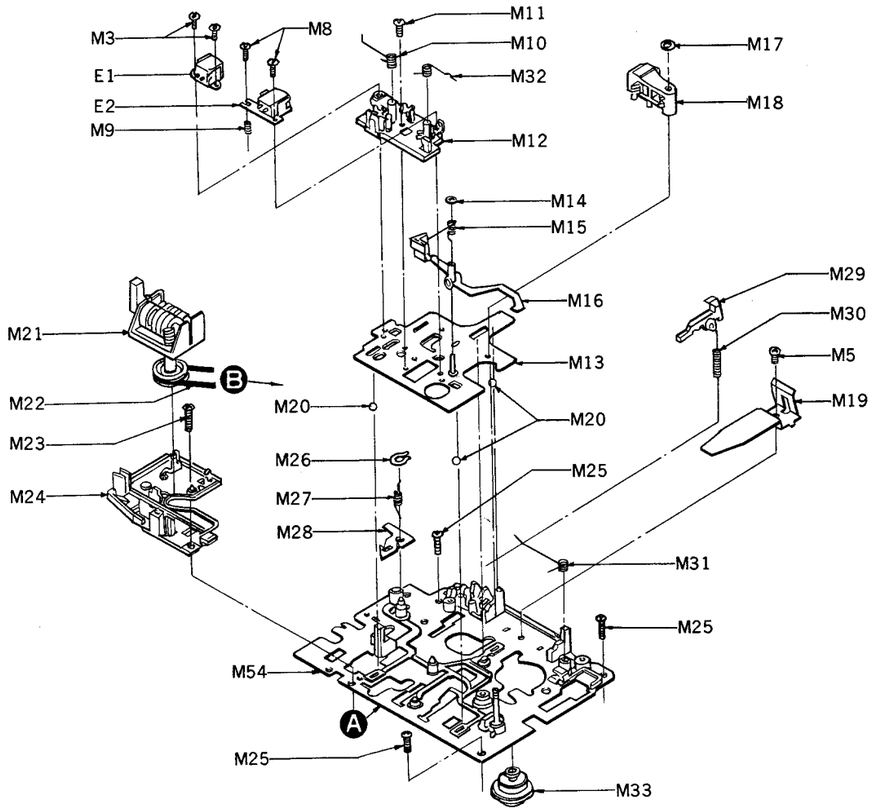

XTB4+12A
XSB3+8S
TSA125-4SB
TKK800951
TBM83683
TKK800703
TBX80578-8
NA
TKY803104-1H
TMM81426
TES8224
TKN80407
EAS10P101SC
NA
TKX808501
QBN8003
NA
QMA3046
TES8211-2
TLY80106DS
140BEB4
TKX802201
TES8146
XTB4+12A
TKX811001
XTB4+15A
TKK800950-1
TNP86950HIX
XSN4+12S
XWG4
XWA4B
TKP8053175-1
TKP8053182
TKP8053191
TKX810901
TNQ8909-1
TKX811601
TBM80369
TKK809346
TBX80617
TBX80618-1
QBT1320
TEK80437
TKK800413-2
XTV3+10B
TBX80608-1
TBX80616-1
TKE808405-1
TBX80615-1
TKK800413-2
TKZ800501
TKK800956
TNQ8907
TKK800949
TKZ800501
TKK800949

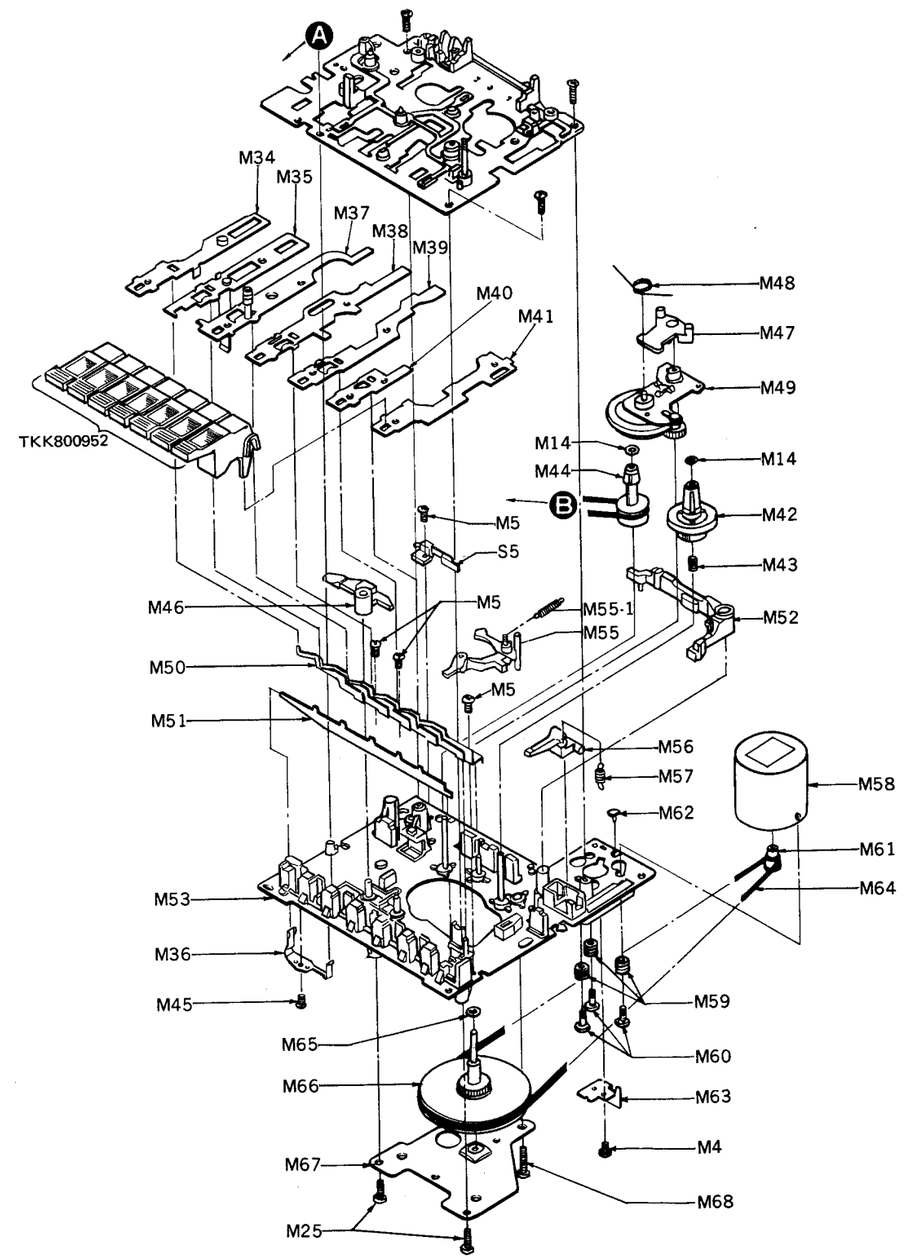
EXPLODED VIEW (TV)



XSB3+10FZS
TJB80245-6
TNP86922-21H
TLR809321
NA
EVVC1AF2523X
VR62 CONTRAST
EVVCOAF25B55
VR63 BRIGHT
TNP81851H1Y
TBX80620
TNP86920-31
TKX811501
TWG97280
TSE80103-5
TKX811101
TNP81851-31H
THE210-0
TNP81851H2X
TNP86950-31H
ESA20711B
TKP8053221
TKE80436-1
TKK810310-4
TNP81585-1H
TLP80382
TKX811701
TJS869080
TNP81585-1H
TKK810310-5
TKE80436-1
EVHU1AF01B15
TUNING CONTROL
TKP8053211
QXS1064
BASS TREBLE
EVHGMA20A15
TNP86923-11
1401
QMN8001
QMN2050
QDP1684
TKX811301
TKK809346
ESA222
QDP1678
NA
EVHGMAF20A14
VOLUME
TKK810311-1
TSX8135
TKK800953-1
QTQ0020
RDZ05A
QBT1320
TSX8326
TKY803201

EXPLODED VIEW (TAPE)





MEMO

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description
TR-5000E		
	TNP81585-1H	
D71	TVS10D1	Power Rectifier
D72	TVS10D1	Power Rectifier
D73	TVS10D1	Power Rectifier
D74	TVS10D1	Power Rectifier
D77	TVS10D1	Power Rectifier
C701	ECKD2H472PE	Ceramic Capacitor 4700pF +100% −0% 500V
C702	ECKD2H472PE	Ceramic Capacitor 4700pF +100% −0% 500V
C703	ECKD2H472PE	Ceramic Capacitor 4700pF +100% −0% 500V
C704	ECKD2H472PE	Ceramic Capacitor 4700pF +100% −0% 500V
C705	ECKD1H103PF	Ceramic Capacitor 0.01μF +100% −0% 50V
	TJC3316	Fuse Holder
	TJS869080	AC/DC Socket
	TNP81851H2X	
TR15	2SC1573Q	Video Output Transistor
L142	TLT271-999	Peaking Coil 270μH
C144	ECQM05104KZ	Polyester Capacitor 0.1μF ± 10% 50V
R147	ERD14FJ474	Carbon Resistor 470KΩ ± 5% 1/4W
R149	ERD14FJ153	Carbon Resistor 15KΩ ± 5% 1/4W
R601	ERD14FJ152	Carbon Resistor 1.5KΩ ± 5% 1/4W
R602	ERD14FJ474	Carbon Resistor 470KΩ ± 5% 1/4W
R603	ERD14TJ224	Carbon Resistor 220KΩ ± 5% 1/4W
VR64	EVTV0UA00B26	Focus Control 2MΩ B
	TJS25640V	Picture Tube Socket
	TNP81851H1Y	
R150	ERD14TJ224	Carbon Resistor 220KΩ ± 5% 1/4W
VR62	EVVCIAF2523X	Contrast Control 2KΩ X
VR63	EVVC0AF25B55	Bright Control 500KΩ B
	TNP81851-31H	
	IC	
IC21	AN240D	Sound IF
IC41	TVSMPC574J	Constant Voltage
	TRANSISTORS	
TR11	2SC1686	1st Video-IF
TR12	2SC1687	2nd Video-IF
TR13	2SC1687	3rd Video-IF
TR14	2SC829C	Video Amp.
TR16	2SA564A	Sync. Sep.
TR17	2SC828A	Sync. Amp
TR18	2SC828A	IF AGC
TR19	2SA564A	RF AGC
TR31	2SC828A	Vert. Osc.
TR32	2SA564A	Vert. Balance
TR33	2SC828A	Vert. Drive
TR34	2SC1317	Vert. Output
TR35	2SA719	Vert. Output
TR42	2SC828A	Horiz. Osc.
TR43	2SC1685	Horiz. Drive
TR44	2SD365HP	Horiz. Output
TR71	2SC828A	AVR
TR73	2SA699A	AVR
	DIODES	
D11	OA91	Video Detector
D13	MA26WA	IF AGC.
D14	MA26WA	IF AGC.
D16	MA26	Sync. Sep.
D18	MA150	IF AGC.
D19	MA26WA	IF AGC.
D31	MA26WA	Vert. Output
D38	MA150	Blanking
D41	MA150	AFC.
D42	MA150	AFC.
D43A	TVS10D2	Damper
D44	TVSBB2A	Rectifier
D45	TVSBB2A	Rectifier
D46	TVSBB10	Rectifier
D75	TVSEQA01-05T	AVR.
D76	MA150	Meter Voltage Controller
D93	EYV620D2R2JA	Variatite
	COILS & TRANSFORMERS	
L101	TLI801315	Video-IF Input Trans.
L102	TLI803318	Sound Trap Coil
L103	TLI803316	Sound Trap Coil
L104	TLI801322	1st Video-IF Trans.
L105	TLI801323	2nd Video-IF Trans.
L107	TLI801318	3rd Video-IF Trans.
L108	TLI801339	Video Detector Trans.
L109	TLT391-999	Peaking Coil 390μH
L110	TLT391-999	Peaking Coil 390μH
L141	TLT027-999	Peaking Coil 2.7μH
L161	TLT270-999	Peaking Coil 27μH
L201	TLS804304	Sound IF Input Trans.
L202	TLS803201	Sound Detector Trans.
L401	TLH3112-5	Horiz. Hold Trans.
L402	TLH80409	Horiz. Drive Trans.
L403	TLH3802C	Choke Coil
L404	TLR809409	RF Coil
T401	TLF80818	Flyback Trans.
	CAPACITORS	
C101	ECCD1H560K	Ceramic 56pF ± 10% 50V
C102	ECCD1H330K	Ceramic 33pF ± 10% 50V
C103	ECCD1H560K	Ceramic 56pF ± 10% 50V
C104	ECCD1H030CC	Ceramic 3pF ±0.25pF 50V
C105	ECCD1H020CC	Ceramic 2pF ±0.25pF 50V

Ref. No.	Part No.	Description		
C106	ECCD1H270K	Ceramic	27pF ± 10%	50V
C107	ECCD1H060CT	Ceramic	6pF ± 0.25pF	50V
C108	ECCD1H060CT	Ceramic	6pF ± 0.25pF	50V
C110	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C111	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C112	ECCD1H101K	Ceramic	100pF ± 10%	50V
C113	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C114	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C115	ECCD1H560K	Ceramic	56pF ± 10%	50V
C116	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C118	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C119	ECCD1H680JS	Ceramic	68pF ± 5%	50V
C120	ECCD1H270J	Ceramic	27pF ± 5%	50V
C121	ECCD1H330JS	Ceramic	33pF ± 5%	50V
C122	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C123	ECEA16V10L	Electrolytic	10μF	16V
C124	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C126	ECEA16Z470	Electrolytic	470μF	16V
C129	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C141	ECEA10V220L	Electrolytic	220μF	10V
C142	ECKD1H102KB	Ceramic	1000pF ± 10%	50V
C145	ECQM4823KZ	Polyester	0.082μF ± 10%	400V
C146	ECCD1H221K	Ceramic	220pF ± 10%	50V
C161	ECEA50ZR47	Electrolytic	0.47μF	50V
C162	ECQM05473KZ	Polyester	0.047μF ± 10%	50V
C163	ECCD1H220K	Ceramic	22pF ± 10%	50V
C171	ECEA25V3R3L	Electrolytic	3.3μF ± 10%	25V
C172	ECCD1H470K	Ceramic	47pF ± 10%	50V
C173	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C182	ECQM05223KZ	Polyester	0.022μF ± 10%	50V
C184	ECSZ10EF10N	Tantal	10μF	10V
C185	ECKD1H102MB	Ceramic	1000pF ± 20%	50V
C187	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C192	ECEA50V10L	Electrolytic	10μF	50V
C200	ECCD1H150J	Ceramic	15pF ± 5%	50V
C201	ECQS1331J	Styrol	330pF ± 5%	100V
C202	ECKD1H473ZF	Ceramic	0.047μF +80%,–20%	50V
C203	ECKD1H473ZF	Ceramic	0.047μF +80%,–20%	50V
C204	ECQM05153KZ	Polyester	0.015μF ± 10%	50V
C205	ECQS1101J	Styrol	100pF ± 5%	100V
C206	ECCD1H080DC	Ceramic	8pF ± 0.5pF	50V
C207	ECEA16V10L	Electrolytic	10μF	16V
C208	ECQM05682KZ	Polyester	6800pF ± 10%	50V
C301	ECQM05223KZ	Polyester	0.022μF ± 10%	50V
C302	ECQM05223KZ	Polyester	0.022μF ± 10%	50V
C303	ECQM05473KZ	Polyester	0.047μF ± 10%	50V
C304	ECQM05104KZ	Polyester	0.1μF ± 10%	50V
C305	ECSZ10EF10N	Tantal	10μF	10V
C306	ECEA16V33L	Electrolytic	33μF	16V
C307	ECSZ10EF10N	Tantal	10μF	10V
C309	ECEA10V100L	Electrolytic	100μF	10V
C310	ECEA16V470L	Electrolytic	470μF	16V
C311	ECQM05683KZ	Polyester	0.068μF ± 10%	50V
C401	ECQM05103KZ	Polyester	0.01μF ± 10%	50V
C402	ECQM05103KZ	Polyester	0.01μF ± 10%	50V
C403	ECQM05104KZ	Polyester	0.1μF ± 10%	50V
C404	ECQM05823KZ	Polyester	0.082μF ± 10%	50V
C405	ECEA25V4R7L	Electrolytic	4.7μF	25V
C407	ECQM05333JZ	Polyester	0.033μF ± 5%	50V
C408	ECQM05682KZ	Polyester	6800pF ± 10%	50V
C409	ECQM05153KZ	Polyester	0.015μF ± 10%	50V
C410	ECKD2H102KB	Ceramic	1000pF ± 10%	500V
C411	ECQM4183KZ	Polyester	0.018μF ± 10%	400V
C412	ECQM4332KZ	Polyester	3300pF ± 10%	400V
C413	ECEA16Z100	Electrolytic	100μF	16V
C414	ECEA16Z470	Electrolytic	470μF	16V
C415	ECKD2H391KB	Ceramic	390pF ± 10%	500V
C416	ECQE6223KZ	Polyester	0.022μF ± 10%	600V
C417	ECEA160V10Z	Electrolytic	10μF	160V
C419	ECQM05272KZ	Polyester	2700pF ± 10%	50V
C420	ECKD2H102KB	Ceramic	1000pF ± 10%	500V
C421	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C422	ECEA16V47L	Electrolytic	47μF	16V
C423	ECKD1H103PF	Ceramic	0.01μF +100%,–0%	50V
C424	ECEA16V10L	Electrolytic	10μF	16V
C425	ECKD2H222KB	Ceramic	2200pF ± 10%	500V
C706	ECET35R2200W	Electrolytic	2200μF	35V
C707	ECEA16V10L	Electrolytic	10μF	16V
C91	ECEA16Z10E	Electrolytic	10μF	16V

RESISTORS

R101	ERD14FJ180	Carbon	18Ω	± 5%	1/4W
R102	ERD14FJ391	Carbon	390Ω	± 5%	1/4W
R103	ERD14FJ471	Carbon	470Ω	± 5%	1/4W
R104	ERD14FJ472	Carbon	4.7KΩ	± 5%	1/4W
R105	ERD14FJ271	Carbon	270Ω	± 5%	1/4W
R106	ERD14FJ561	Carbon	560Ω	± 5%	1/4W
R107	ERD14FJ562	Carbon	5.6KΩ	± 5%	1/4W
R108	ERD14FJ223	Carbon	22KΩ	± 5%	1/4W
R109	ERD14FJ471	Carbon	470Ω	± 5%	1/4W
R110	ERD14FJ391	Carbon	390Ω	± 5%	1/4W
R111	ERD14FJ101	Carbon	100Ω	± 5%	1/4W
R112	ERD14FJ562	Carbon	5.6KΩ	± 5%	1/4W
R113	ERD14FJ223	Carbon	22KΩ	± 5%	1/4W
R114	ERD14FJ221	Carbon	220Ω	± 5%	1/4W
R115	ERD14FJ222	Carbon	2.2KΩ	± 5%	1/4W
R116	ERD14FJ101	Carbon	100Ω	± 5%	1/4W
R118	ERD14FJ680	Carbon	68Ω	± 5%	1/4W
R119	ERD14FJ472	Carbon	4.7KΩ	± 5%	1/4W
R120	ERD14FJ683	Carbon	68KΩ	± 5%	1/4W
R125	ERD14FJ4R7	Carbon	4.7Ω	± 5%	1/4W
R141	ERD14FJ102	Carbon	1KΩ	± 5%	1/4W
R142	ERD14FJ470	Carbon	47Ω	± 5%	1/4W
R143	ERD14FJ122	Carbon	1.2KΩ	± 5%	1/4W
R144	ERD14FJ102	Carbon	1KΩ	± 5%	1/4W
R145	ERD14FJ221	Carbon	220Ω	± 5%	1/4W
R152	ERC12GJ475	Solid	4.7MΩ	± 5%	1/2W
R161	ERD14FJ390	Carbon	39Ω	± 5%	1/4W
R162	ERD14FJ122	Carbon	1.2KΩ	± 5%	1/4W

Ref. No.	Part No.	Description
R163	ERD14FJ822	Carbon 8.2KΩ ± 5% 1/4W
R164	ERD14FJ334	Carbon 330KΩ ± 5% 1/4W
R165	ERD14FJ822	Carbon 8.2KΩ ± 5% 1/4W
R171	ERD14FJ222	Carbon 2.2KΩ ± 5% 1/4W
R172	ERD14FJ103	Carbon 10KΩ ± 5% 1/4W
R173	ERD14FJ102	Carbon 1KΩ ± 5% 1/4W
R174	ERD14FJ681	Carbon 680Ω ± 5% 1/4W
R181	ERD14FJ562	Carbon 5.6KΩ ± 5% 1/4W
R182	ERD14FJ821	Carbon 820Ω ± 5% 1/4W
R183	ERD14FJ822	Carbon 8.2KΩ ± 5% 1/4W
R184	ERD14FJ562	Carbon 5.6KΩ ± 5% 1/4W
R185	ERD14FJ182	Carbon 1.8KΩ ± 5% 1/4W
R186	ERD14FJ221	Carbon 220Ω ± 5% 1/4W
R187	ERD14FJ223	Carbon 22KΩ ± 5% 1/4W
R188	ERD14FJ563	Carbon 56KΩ ± 5% 1/4W
R189	ERD14FJ391	Carbon 390Ω ± 5% 1/4W
R202	ERD14FJ220	Carbon 22Ω ± 5% 1/4W
R204	ERD14FJ223	Carbon 22KΩ ± 5% 1/4W
R205	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W
R206	ERD14FJ103	Carbon 10KΩ ± 5% 1/4W
R207	ERD14FJ472	Carbon 4.7KΩ ± 5% 1/4W
R301	ERD14FJ222	Carbon 2.2KΩ ± 5% 1/4W
R302	ERD14FJ272	Carbon 2.7KΩ ± 5% 1/4W
R303	ERD14FJ222	Carbon 2.2KΩ ± 5% 1/4W
R304	ERD14FJ273	Carbon 27KΩ ± 5% 1/4W
R305	ERD14TJ224	Carbon 220KΩ ± 5% 1/4W
R306	ERD14FJ472	Carbon 4.7KΩ ± 5% 1/4W
R307	ERTD3ZHL402S	Thermister
R308	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W
R309	ERD14FJ6R8	Carbon 6.8Ω ± 5% 1/4W
R310	ERD14FJ5R6	Carbon 5.6Ω ± 5% 1/4W
R313	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W
R314	ERD14FJ562	Carbon 5.6KΩ ± 5% 1/4W
R315	ERD14FJ820	Carbon 82Ω ± 5% 1/4W
R316	ERD14FJ152	Carbon 1.5KΩ ± 5% 1/4W
R317	ERD14FJ333	Carbon 33KΩ ± 5% 1/4W
R318	ERD14FJ100	Carbon 10Ω ± 5% 1/4W
R319	ERD14FJ821	Carbon 820Ω ± 5% 1/4W
R320	ERD14FJ471	Carbon 470Ω ± 5% 1/4W
R321	ERD14FJ2R2	Carbon 2.2Ω ± 5% 1/4W
R322	ERD14FJ1R0	Carbon 1Ω ± 5% 1/4W
R323	ERD14FJ181	Carbon 180Ω ± 5% 1/4W
R324	ERD14FJ331	Carbon 330Ω ± 5% 1/4W
R325	ERD14FJ472	Carbon 4.7KΩ ± 5% 1/4W
R401	ERD14FJ822	Carbon 8.2KΩ ± 5% 1/4W
R402	ERD14FJ822	Carbon 8.2KΩ ± 5% 1/4W
R403	ERD14FJ822	Carbon 8.2KΩ ± 5% 1/4W
R404	ERD14FJ221	Carbon 220Ω ± 5% 1/4W
R406	ERD14FJ561	Carbon 560Ω ± 5% 1/4W
R407	ERD14FJ223	Carbon 22KΩ ± 5% 1/4W
R408	ERD14FJ122	Carbon 1.2KΩ ± 5% 1/4W
R409	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W
R410	ERD14FJ181	Carbon 180Ω ± 5% 1/4W
R411	ERD14FJ471	Carbon 470Ω ± 5% 1/4W

Ref. No.	Part No.	Description
R412	ERD14FJ101	Carbon 100Ω ± 5% 1/4W
R413	ERD14FJ101	Carbon 100Ω ± 5% 1/4W
R414	ERD14FJ220	Carbon 22Ω ± 5% 1/4W
R415	ERD14FJ103	Carbon 10KΩ ± 5% 1/4W
R416	ERC12GJ223	Solid 22KΩ ± 5% 1/2W
R701	ERD14FJ562	Carbon 5.6KΩ ± 5% 1/4W
R702	ERD14FJ822	Carbon 8.2KΩ ± 5% 1/4W
R703	ERD14FJ330	Carbon 33Ω ± 5% 1/4W
R704	ERD14FJ271	Carbon 270Ω ± 5% 1/4W
R705	ERD14FJ821	Carnon 820Ω ± 5% 1/4W
R707	TRF5SJ680	Non Flame 68Ω ± 5% 5W
R708	ERD12FJ561	Carbon 560Ω ± 5% 1/2W
R709	ERD14FJ823	Carbon 82KΩ ± 5% 1/4W
R710	ERD14FJ152	Carbon 1.5KΩ ± 5% 1/4W
R91	ERD14FJ471	Carbon 470Ω ± 5% 1/4W
R94	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W
R96	ERD14FJ5R6	Carbon 5.6Ω ± 5% 1/4W
R99	ERD14FJ392	Carbon 3.9KΩ ± 5% 1/4W

C-R COMBINATIONS

X101	TXC5FD03C	C-R Combination
X141	EFCA5R5M1	5.5MHz Cerap

CONTROLS

VR18	EVTS3AA00B23	IF AGC.
VR19	EVTS3AA00B52	RF AGC.
VR31	EVD66A25KA15	Vert. Hold
VR32	EVTS3AA00B24	Vert. Height
VR33	EVTS3AA00B52	Vert. Lin.
VR71	EVTS3AA00B53	AVR
VR93	EVTS3AA00B15	Sub Tuning
VR94	EVTS3AA00B15	Sub Tuning
VR95	EVTS3AA00B24	Sub Tuning

OTHER PARTS

	TNV99002F	VHF Tuner
SW71	TSE80106	Select Switch
SW91	TSE80111	TV. Band Selector Switch
	TJT8503MSE	3-P Socket Housing
	TJT8505MSE	5-P Socket Housing
	TJT8506M	6-P Socket Housing
	TJT8707M	Socket Housing Terminal

VHF TUNER PARTS

TR1	2SC1779A	Transistor
TR2	2SC1687F	Transistor
TR3	2SC1215	Transistor
	MA56	Diode
	MA320GINR	Diode

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TRANSISTORS

Q101	2SC1359	Conv.
Q102	2SC829C	IF Amp.
Q103	2SC829C	IF Amp.

Note: We changed symbol of transistor "TR" to "Q" on radio circuit board.

Ref. No.	Part No.	Description
	DIODES	
D101	OA91	IF Amp.
D102	OA91	Sound Detector
D103	TVSVD1221L	Sound Detector
D104	OA91	Selector
	COILS & TRANSFORMERS	
L1001	TLR80118	Bar Antenna
L1002	QLA3M1	SW1 Antenna Coil
L1003	RLA3M3	SW2 Antenna Coil
L1004	RLQY15G5	RF Coil
L1005	QLQY75S7W	RF Coil
L1006	QLQY30S6W	RF Coil
L1007	RLO2M6	MW Osc Coil
L1008	RLO3M3	SW1 Osc Coil
L1009	RLO3M4	SW2 Osc Coil
L1010	RLI2M203	1st IF Trans.
L1011	RLI2M205	2nd IF Trans.
L1012	RLI2M401	3rd IF Trans.
	CAPACITORS	
C1001	ECKD1H223PF	Ceramic 0.022μF +100%,–0% 50V
C1002	PVC2K20T-5	Pori. Variable
C1003	ECCD1H080CC	Ceramic 8pF ± 0.25pF 50V
C1005	ECCD1H060CC	Ceramic 6pF ± 0.25pF 50V
C1008	ECKD1H103PF	Ceramic 0.01μF +100%,–0% 50V
C1009	ECCD1H270K	Ceramic 27pF ± 10% 50V
C1010	ECKD1H103PF	Ceramic 0.01μF +100%,–0% 50V
C1011	ECKD1H103PF	Ceramic 0.01μF +100%,–0% 50V
C1012	ECQM05332KZ	Polyester 3300pF ± 10% 50V
C1013	ECQS1361K	Styrol 360pF ± 10% 100V
C1015	ECCD1H150JS	Ceramic 15pF ± 5% 50V
C1016	ECQS1152KZ	Styrol 1500pF ± 10% 100V
C1017		
C1018	ECCD1H070CC	Ceramic 7pF ± 0.25pF 50V
C1019	ECQS1472KZ	Styrol 4700pF ± 10% 100V
C1020	QCV2120	Trimmer
C1021	ECCD1H060CC	Ceramic 6pF ± 0.25pF 50V
C1024	ECQS1152KZ	Styrol 1500pF ± 10% 50V
C1025	ECEA16V10L	Electrolytic 10μF 16V
C1026	ECKD1H223PF	Ceramic 0.022μF +100%,–0% 50V
C1027	ECKD1H223PF	Ceramic 0.022μF +100%,–0% 50V
C1028	ECKD1H223PF	Ceramic 0.022μF +100%,–0% 50V
C1029	ECKD1H223PF	Ceramic 0.022μF +100%,–0% 50V
C1030	ECEA10V100L	Electrolytic 100μF 10V
C1031	ECKD1H223PF	Ceramic 0.022μF +100%,–0% 50V
C1032	ECKD1H223PF	Ceramic 0.022μF +100%,–0% 50V
C1033	ECEA16V10L	Electrolytic 10μF 16V
C1035	ECEA10V1000L	Electrolytic 1000μF 10V
C1036	ECKD1H821MB	Ceramic 820pF ± 20% 50V
C1037	ECEA10V47L	Electrolytic 47μF 10V
C1038	ECKD1H103PF	Ceramic 0.01μF +100%,–0% 50V
C1039	ECKD1H821MB	Ceramic 820pF ± 20% 50V
C1040	ECKD1H102MB	Ceramic 1000pF ± 20% 50V

Ref. No.	Part No.	Description
	RESISTORS	
R1001	ERD25TJ104	Carbon 100KΩ ± 5% 1/4W
R1002	ERD25TJ102	Carbon 1KΩ ± 5% 1/4W
R1003	ERD25TJ331	Carbon 330Ω ± 5% 1/4W
R1004	ERD25TJ151	Carbon 150Ω ± 5% 1/4W
R1005	ERD25TJ150	Carbon 15Ω ± 5% 1/4W
R1006	ERD25TJ183	Carbon 18KΩ ± 5% 1/4W
R1007	ERD25TJ821	Carbon 820Ω ± 5% 1/4W
R1008	ERD25TJ102	Carbon 1KΩ ± 5% 1/4W
R1009	ERD25TJ103	Carbon 10KΩ ± 5% 1/4W
R1010	ERD25TJ561	Carbon 560Ω ± 5% 1/4W
R1011	ERD25TJ153	Carbon 15KΩ ± 5% 1/4W
R1012	ERTD2FHL332S	Thermistor
R1013	ERD25TJ472	Carbon 4.7KΩ ± 5% 1/4W
R1014	ERD25TJ154	Carbon 150KΩ ± 5% 1/4W
R1015	ERD25TJ103	Carbon 10KΩ ± 5% 1/4W
R1016	ERD25TJ102	Carbon 1KΩ ± 5% 1/4W
R1018	ERD25TJ101	Carbon 100Ω ± 5% 1/4W
R1020	ERD25TJ271	Carbon 270Ω ± 5% 1/4W
R1021	ERD25TJ331	Carbon 330Ω ± 5% 1/4W
R1022	ERG1ANJ820	Metal Oxide 82Ω ± 5% 1W
R1023	ERD25TJ182	Carbon 1.8KΩ ± 5% 1/4W
R1024	ERD25TJ101	Carbon 100Ω ± 5% 1/4W
R1025	ERD25TJ472	Carbon 4.7KΩ ± 5% 1/4W
	OTHER PARTS	
	ESA2654	Band Selector Switch
	XYN26-06FN	Pori. Variable Capacitor Mounting Screw.
	XAMT303	Pilot Lamp

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	TRANSISTORS	
TR1	2SC644S	Equalizer
TR2	2SC828A	Equalizer
TR3	2SC828A	Equalizer
TR4	2SC828A	AGC
TR5	2SC828A	AGC
TR6	2SC828A	Equalizer
TR7	2SC1383	Bias Osc.
TR8	2SD389BLB	Motor Avr..
TR9	2SC828A	Audio Amp.
TR10	2SC828A	Audio Drive
TR11	2SC1846R	Audio Output
TR12	2SA885Q	Audio Output
	DIODES	
D1	TVSKB162D	Equalizer
D2	OA91	Equalizer
D3	OA91	AGC
D4	TVSKB265A	Bias Osc.
D6	TVSUZ6R8B	Motor Avr
D7	TVS10D1	Motor Avr
D9	MA26WA	Audio Output

Ref. No.	Part No.	Description
	COILS & TRANSFORMERS	
L1	QLA0378	Record Trans
L2	QLB0155	Osc. Coil
L3	QLQM1531	Trap Coil
	CAPACITORS	
C1	ECQM05472KZ	Polyester 4700pF ± 10% 50V
C2	ECEA25V3R3L	Electrolytic 3.3μF 25V
C3	ECCD1H181K	Ceramic 180pF ± 10% 50V
C5	ECEA6V100L	Electrolytic 100μF 6V
C7	ECEA16V10L	Electrolytic 10μF 16V
C8	ECEA10V100L	Electrolytic 100μF 10V
C9	ECEA16V10L	Electrolytic 10μF 16V
C10	ECKD1H391KB	Ceramic 390pF ± 10% 50V
C11	ECEA6V220L	Electrolytic 220μF 6V
C12	ECKD1H391KB	Ceramic 390pF ± 10% 50V
C13	ECEA16V10L	Electrolytic 10μF 16V
C14	ECEA25V3R3L	Electrolytic 3.3μF 25V
C15	ECQM05333KZ	Polyester 0.033μF ± 10% 50V
C16	ECKD1H103PF	Ceramic 0.01μF +100%,–0% 50V
C17	ECEA25V3R3L	Electrolytic 3.3μF 25V
C18	ECKD1H102MB	Ceramic 1000pF ± 20% 50V
C19	ECQM05222KZ	Polyester 2200pF ± 10% 50V
C20	ECEA10V47L	Electrolytic 47μF 10V
C21	ECEA25V3R3L	Electrolytic 3.3μF 25V
C22	ECQM05472KZ	Polyester 4700pF ± 10% 50V
C25	ECQM05104KZ	Polyester
C27	ECQM05332JZ	Polyester
C28	ECQM05152JZ	Polyester
C29	ECEA25V3R3L	Electrolytic
C30	ECQM05332JZ	Polyester
C31	ECEA10V100L	Electrolytic
C32	ECQM05223JZ	Polyester
C33	ECCD1H331K	Ceramic
C35	ECCD1H680K	Ceramic
C40	ECEA16N33	Electrolytic
C41	ECEA25V220L	Electrolytic
C42	ECEA16V10L	Electrolytic
C43	ECEA16V10L	Electrolytic
C44	ECKD1H103PF	Ceramic
C50	ECEA50V1L	Electrolytic
C51	ECEA16V10L	Electrolytic
C52	ECCD1H181K	Ceramic
C53	ECEA6V100L	Electrolytic
C54	ECEA10V100L	Electrolytic
C55	ECKD1H103PF	Ceramic
C56	ECKD1H103PF	Ceramic
C57	ECEA16V220L	Electrolytic 220μF 16V
C58	ECEB25V1000L	Electrolytic 1000μF 25V
C59	ECEA10V100L	Electrolytic 100μF 10V
C60	ECEA50ZR47M	Electrolytic 0.47μF 50V
C64	ECKD1H103PF	Ceramic 0.01μF +100%,–0% 50V
C65	ECQM05273KZ	Polyester 0.027μF ± 10% 50V
C66	ECQM05822KZ	Polyester 8200pF ± 10% 50V
C67	ECEA16V220L	Electrolytic 220μF 16V
C68	ECKD1H103PF	Ceramic 0.01μF +100%,–0% 50V
	RESISTORS	
R1	ERD14FJ561	Carbon 560Ω ± 5% 1/4W
R3	ERD14FJ122	Carbon 1.2KΩ ± 5% 1/4W
R4	ERD14FJ472	Carbon 4.7KΩ ± 5% 1/4W
R5	ERD14FJ394	Carbon 390KΩ ± 5% 1/4W
R6	ERD14FJ390	Carbon 39Ω ± 5% 1/4W
R7	ERD14FJ103	Carbon 10KΩ ± 5% 1/4W
R8	ERD14FJ152	Carbon 1.5KΩ ± 5% 1/4W
R9	ERD14FJ223	Carbon 22KΩ ± 5% 1/4W
R10	ERD14FJ103	Carbon 10KΩ ± 5% 1/4W
R11	ERD14FJ122	Carbon 1.2KΩ ± 5% 1/4W
R12	ERD14FJ103	Carbon 10KΩ ± 5% 1/4W
R13	ERD14FJ820	Carbon 82Ω ± 5% 1/4W
R14	ERD14TJ224	Carbon 220KΩ ± 5% 1/4W
R15	ERD14FJ221	Carbon 220Ω ± 5% 1/4W
R16	ERD14FJ473	Carbon 47KΩ ± 5% 1/4W
R17	ERD14FJ392	Carbon 3.9KΩ ± 5% 1/4W
R18	ERD14FJ472	Carbon 4.7KΩ ± 5% 1/4W
R19	ERD14FJ222	Carbon 2.2KΩ ± 5% 1/4W
R20	ERD14FJ273	Carbon 27KΩ ± 5% 1/4W
R21	ERD14FJ103	Carbon 10KΩ ± 5% 1/4W
R22	ERD14FJ562	Carbon 5.6KΩ ± 5% 1/4W
R23	ERD14FJ632	Carbon 6.8KΩ ± 5% 1/4W
R24	ERD14FJ473	Carbon 47KΩ ± 5% 1/4W
R25	ERD14FJ184	Carbon 180KΩ ± 5% 1/4W
R26	ERD14FJ272	Carbon 2.7KΩ ± 5% 1/4W
R27	ERD14FJ181	Carbon 180Ω ± 5% 1/4W
R28	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W
R29	ERD14FJ100	Carbon 10Ω ± 5% 1/4W
R30	ERD14FJ562	Carbon 5.6KΩ ± 5% 1/4W
R31	ERD14FJ8R2	Carbon 8.2KΩ ± 5% 1/4W
R32	ERD14FJ1R0	Carbon 1Ω ± 5% 1/4W
R33	ERD14FJ472	Carbon 4.7KΩ ± 5% 1/4W
R34	ERD14FJ332	Carbon 3.3KΩ ± 5% 1/4W
R35	ERD14FJ561	Carbon 560Ω ± 5% 1/4W
R36	ERD14FJ152	Carbon 1.5KΩ ± 5% 1/4W
R43	TRF3SJ220	Non Flame 22Ω ± 5% 3W
R45	ERD14FJ152	Carbon 1.5KΩ ± 5% 1/4W
R46	ERD14FJ332	Carbon 3.3KΩ ± 5% 1/4W
R50	ERD14FJ104	Carbon 100KΩ ± 5% 1/4W
R51	ERD14FJ820	Carbon 82Ω ± 5% 1/4W
R52	ERD14FJ123	Carbon 12KΩ ± 5% 1/4W
R53	ERD14FJ683	Carbon 68KΩ ± 5% 1/4W
R54	ERD14FJ100	Carbon 10Ω ± 5% 1/4W
R55	ERD14FJ331	Carbon 330Ω ± 5% 1/4W
R56	ERD14FJ471	Carbon 470Ω ± 5% 1/4W
R57	TRF3SJ150	Non Flame 15Ω ± 5% 3W
R58	ERD14FJ122	Carbon 1.2KΩ ± 5% 1/4W
R59	ERD14FJ1R0	Carbon 1Ω ± 5% 1/4W
R60	ERD14FJ1R0	Carbon 1Ω ± 5% 1/4W
R61	ERD14FJ560	Carbon 56Ω ± 5% 1/4W
R62	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W

Ref. No.	Part No.	Description
R63	ERD14FJ152	Carbon 1.5KΩ ± 5% 1/4W
R66	ERD14FJ273	Carbon 27KΩ ± 5% 1/4W
R67	ERD14FJ682	Carbon 6.8KΩ ± 5% 1/4W
	OTHER PARTS	
	TJT8806J	3-P Terminal
	QJA0154	M3 Jack
	QJA0156	M2 Jack
VR1	EVTV0AA00B13	Control 1KΩ B
	QSSA203	Switch
	TES8132	Transistor Mounting Spring
	ZTV3+8B	Transistor Spring Mounting Screw
	TNP86923-11	
	TRANSISTOR	
TR51	2SC828A	Tone Amp.
	CAPACITORS	
C501	ECEA25V3R3L	Electrolytic 3.3μF 25V
C502	ECCD1H151K	Ceramic 150pF ± 10% 50V
C503	ECEA16V10L	Electrolytic 10μF 16V
C504	ECQM05472KZ	Polyester 4700pF ± 10% 50V
C505	ECQM05273KZ	Polyester 0.027μF ± 10% 50V
C506	ECQM05103KZ	Polyester 0.01μF ± 10% 50V
C507	ECQM05154KZ	Polyester 0.15μF ± 10% 50V
C508	ECEA16V33L	Electrolytic 33μF 16V
	RESISTORS	
R501	ERD14FJ103	Carbon Resistor 10KΩ ± 5% 1/4W
R502	ERD14FJ474	Carbon Resistor 470KΩ ± 5% 1/4W
R503	ERD14FJ101	Carbon Resistor 100Ω ± 5% 1/4W
R504	ERD14FJ682	Carbon Resistor 6.8KΩ ± 5% 1/4W
R505	ERD14FJ392	Carbon Resistor 3.9KΩ ± 5% 1/4W
R506	ERD14FJ122	Carbon Resistor 1.2KΩ ± 5% 1/4W
R507	ERD14FJ392	Carbon Resistor 3.9KΩ ± 5% 1/4W
R508	ERD14FJ272	Carbon Resistor 2.7KΩ ± 5% 1/4W
	CONTROLS	
VR51	EVHGMAF20A14	Volume 10KΩ A
VR52	EVHGMAF20A15	Treble 100KΩ A
VR53	EVHGMAF20A15	Bass 100KΩ A
	OTHER PARTS	
	THN1948-2	Control Mounting Screw
	QUN1623	
M3	XSN2+6	Screw 2 x 6
M4	XTN26+5B	Screw 2.6 x 5
M5	XTN26+6B	Screw 2.6 x 5
M8	XSN2+8	Screw 2 x 8
M9	QBC1278A	Head Spring
M10	QBN1481A	Play Spring
M11	XSN26+6	Screw 2.6 x 6
M12	QMZ1186	Head Spacer
M13	QXK1681B	Head Base Plate
M14	QBW2008	Poly Washer 2φ
M15	QBN1478A	Auto-Stop Detector Spring
M16	QXL0982	Auto-Stop Detector Lever

Ref. No.	Part No.	Description
M17	QBN2046	Poly Washer 3φ
M18	QXL0979B	Pressure Roller Ass'y
M19	QBP1659	Head Plate Pressure Plate
M20	QDK1017	Steel Ball 2φ
M21	QDC0084	Tape Counter
M22	QDB0220	Counter Belt
M23	XTN3+12B	Screw 3 x 12
M24	QMZ1185B	Counter Table
M25	XTN3+10B	Screw 3 x 10
M26	XUB4FT	Circlip 4φ
M27	QBN1480A	Pause Lock Spring
M28	QML2898A	Pause Lock Plate
M29	QML2900C	Erase Safety Lever
M30	QBC1193A	Erase Safety Lever Spring
M31	QBN1479	Idler Spring
M32	QBN1488	Pressure Poller Spring
M33	QXI0088A	Idler Lever
M34	QXR0163	Pause Rod Ass'y
M35	QXR0289	Record Rod Ass'y
M36	QBP1662A	Lock Rod Spring
M37	QXR0304	Playback Rod Ass'y
M38	QMR1478B	Rewind Rod
M39	QMR1477A	Fasy Forward Rod
M40	QMR1476B	Stop Rod
M41	QMR1475	Eject Rod
M42	QXD0054C	Takeup Reel Table
M43	QBC1279	Back Tension Spring
M44	QDR1100B	Supply Reel Table
M45	XTN26+6B	Screw 2.6 x 6
M46	QML2904B	Pause Lever
M47	QML2912C	Fast Forward Operation Lever
M48	QBN1477A	Fast Forward Armspring
M49	QXG1023B	Fast Forward Gear Arm Ass'y
M50	QBP1664B	Operation Rod Spring
M51	QMR1473B	Lock Rod
M52	QML2905E	Switch Arm
M53	QXK1667	Lower Base Plate
M54	QXK1668	Upper Base Plate
M55	QXL0980C	Auto-Stop Drive Lever Ass'y
M55-1	QBT1489E	Auto-Stop Spring
M56	QML2902	Eject Arm
M57	QBT1773DM	Eject Arm Spring
M58	MHT5ST6Y	Motor
M59	QBG1539	Motor Cushion
M60	QHQ1223B	Motor Holding Screw
M61	QXP0513A	Motor Pulley Ass'y
M62	QBG1553A	Rubber Cushion
M63	QMA2676B	Belt Guide
M64	QDB0219	Flywheel Belt
M65	QBW2049A	Poly Washer
M66	QXF0113D	Flywheel Ass'y
M67	QXH0218B	Flywheel Retainer Ass'y
M68	XTN3+15B	Screw 3 x 15
S5	QSB0178IB	Leaf Switch

Ref. No.	Part No.	Description
E1	QWY0127Z	Record/Playback Head
E2	QWY2122Z	Erase Head
	QJS0748JN	3 Pin Housing
	QJT1042	Connector
	TR5000E	
	TKY803104-1H	Upper Cabinet Complete
	TKY803201	Bottom Cabinet Complete
	TKE808405-1	Escutcheon Complete
	TKP8053175-1	Alumi. Panel Complete
	TKP8053182	Alumi. Ring Panel
	TKP8053191	Cassette Expression Panel
	TKP8053211	Radio Panel
	TKP8053221	TV. Panel
	TKK809346	Indicator Transparence Plate
	TKK800703	Battery Cover
	TKK800951	Cassette Case Complete
	TKK800950-1	Light Button
	TKK800413-2	Guard Arm
	TKK810310-4	TV. Indicator
	TKK810310-5	Radio Indicator
	TKK800949	Set Leg
	TKK800953-1	Microphone Stand Complete
	TKK800956	Shoulder Belt
	TKK800952	Cassette Button Complete
	TKK810311-1	Ext. Terminal Board
	TKN80407	Speaker Net
	TKX802201	Speaker Holder
	TKX808501	Battery Spring Holder
	TKX810901	Cabinet Holder (Right)
	TKX811001	Light Button Holder
	TKX811101	Circuit Board Holder (Right)
	TKX811201	Circuit Board Holder (Left)
	TKX811301	Radio Bracket
	TKX811401	TV. Tuning Bracket
	TKX811501	Flyback Trans. Holder
	TKX811601	Meter Holder
	TKX811701	AC Bracket
	TKZ800501	Set Leg Bracket
	TBX80632	Radio Band Selector Knob
	TBX80578-8	Small Knob
	TBX80608-1	Tone Knob
	TBX80615-1	Volume Knob
	TBX80616-1	Tuning Knob
	TBX80617	TV. Band Selector Knob
	TBX80618-1	Selector Knob
	TBX80620	V/H Hold Knob
	TBM83683	Model Plate
	TBM80369	N Badge
	TEK80436-1	TV/Radio Revolving Drum
	TEK80437	TV. Tuning Pulley
	TES8211-2	Battery Spring (Big)
	TES8224	Battery Spring (Small)
	TES8146	Light Button Spring
	TMM81426	Battery Insert Pipe

Ref. No.	Part No.	Description
	QMA3046	Cassette Case Spring Angle
	QKJ0113A	Cassette Case Holder
	QDP1678	Roller (Big)
	QDP1684	Roller (Small)
	QTQ0020	Radio Tuning Pulley
	OMN2050	Roller Shaft
	QMN8001	Roller Shaft
	QXS1064	Radio Tuning Shaft
	QBT1320	Coil Spring
	QYR0158	Chassis Cover Complete
	QBN8003	Cassette Case Spring
	QBG1210X	Vibration Defend Rubber
	RDZ05A	Dial Rope (500m)
	140BEB4	Picture Tube
	TLY80106DS	Deflection Yoke
	EAS10P101SC	Speaker
	TLP80382	Power Trans.
	TNQ8907	Microphone
	TNQ8909-1	Meter
	QFTC07L003NZ	Audition Tape
	TSX8326	Car Cord.
	TSX8135	Power Cord
	TSA125-4SB	Rod Antenna
	TSE80103-5	Voltage Selector Switch
	TNP81581-2H	Fuse Circuit Board Complete
	TNP81585-1H	Power Circuit Board Complete
	TNP81851-31H	Main Circuit Board Complete
	TNP81851H2X	Picture Tube Socket Circuit Board Complete
	TNP81851H1Y	Control Circuit Board Complete
	TNP86920-31	Cassette Circuit Board Complete
	TNP86923-11	Tone Control Circuit Board Complete
	TNP86950-31H	Radio Circuit Board Complete
	TNP86950H1X	Light Button Circuit Board Complete
VR91	EVHU1AF01B15	Tuning Control
L91	TLR809321	Balun Coil
C91	ECKD2H102KB	Ceramic Capacitor 1000pF ± 10% 500V
	XBAT21251	Fuse 0.25A
	XBA2C04NS5	Fuse 0.4A
	XBA1C25NS5	Fuse 2.5A
	TWG97280	High Voltage Wire With Cap
	TJB80245-6	Antenna Terminal Board
	TJC3316	Fuse Holder
	TJC80315-1	Battery Terminal +
	TJC80324-1	Battery Connector Terminal
	TJT8503MSE	3-P Socket Housing
	TJT8504MSE	4-P Socket Housing
	TJT8506M	6-P Socket Housing
	TJT8707M	Socket Housing Terminal (Thin)
	TJT8708M	Socket Housing Termimal (Big)
	XEHT3YDA-B1	Earphone
	ESA222	Radio Band Selector Lever
	ESA20711B	Wire Complete
	TPC811351	Outer Carton

Ref. No.	Part No.	Description
	TXAPD2512F	Filler Complete
	TPE84002	Set Cover
	TQA81378	Schematic Diagram
	TQB810132	Instruction Book
	TQB811132	Fan Bag
	SCREWS & WASHERS	
	XTB4+20AFZ	Cabinet Mounting Screw
	THE210-0	Voltage Selector Switch Mounting Screw
	XTB4+12A	Rod Antenna Block, Speaker, Cassette Mecha, Flyback Trans, Holder, Tone Block, Set Leg, Bracket, Power Block Mounting Screw
	XTV3+10A	Battery Spring, Panel, Cassette Case, Radio Panel Mounting Screw
	XSB3+8S	Rod Antenna Mounting Screw
	XTB4+15A	Light Button Holder, Picture Tube, Bottom Cabinet, Radio Complete, Meter, TV Tuning Block, Cabinet Holder Mounting Screw
	XTB4+20A	Picture Tube Mounting Screw
	XTB4+10A	Bottom Cabinet, Light Button Spring AM/FM Selector Switch Mounting Screw
	XSB3+10FZS	Antenna Terminal Board Mounting Screw
	XSN4+12S	Guard Arm Mounting, Screw
	XWG4	Guard Arm Mounting, Washer
	XWA4B	Guard Arm Mounting, Spring Washer
	XTN3+10AFZ	TV/Radio Indicator Mounting Screw
	XNS10	Tuning Control Mounting Nut
	XWS10	Tuning Control Mounting Washer
	XYN26+E8EX	Dial Dram Mounting Screw
	THN1948-2	Radio Dial Mounting Nut
	THW40807-9	Radio Dial Mounting Washer
	TMM81920	Revolving Drum Mounting Rivete
	XTV26+6CFZ	Chassis Cover Mounting Screw
	XTV3+10B	Ext. Terminal Board Mounting Screw